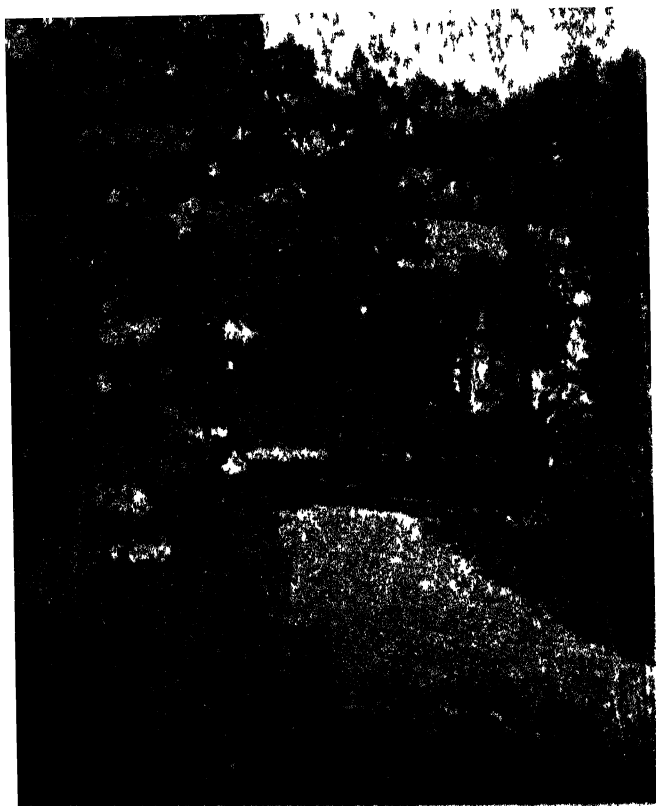


204483

A BOOK OF GARDENING
FOR THE SUB-TROPICS



BEAUMONTIA

A FINE SPECIES IN A GARDEN

A BOOK OF
GARDENING FOR
THE SUB-TROPICS
WITH A CALENDAR FOR
CAIRO. BY *MARY STOUT* &
MADLINE AGAR, AND
A PREFACE BY *CHARLES*
WHYMPER, R.I.

London: H. F. & G. WITHERBY,
326, High Holborn, W.C., 1921.

PREFACE

ONE of the earliest references in literature that I can remember is applied to Egypt and its gardening reputation. It is contained in the lament of that vast horde of Semites led by Moses into the desert. They started out gaily enough, for they had "despoiled the Egyptians," but gaiety declined when it was found that "jewels of silver and jewels of gold" neither quenched thirst nor satisfied hunger. Their lamentation, "we remember the melons and the leeks and the garlick and the onions which we did eat fully, but now our soul is dried away," would seem not only to be an ancient but excellent advertisement of Sub-Tropic possibilities in the way of flower and vegetable culture to-day.

With this book on Sub-Tropic gardening we are able to obtain a very different picture and perfume, for its authors tell us, with the stored knowledge and enthusiasm of flower-lovers, of all the host of lovely and sweet-smelling plants that can be grown between the thirtieth degrees of latitude, so banishing from our minds the recollection of those perspiring, garlick-eating Jews amid the African deserts.

The Anglo-Saxon is a peculiar person. One of his peculiarities is an intense love of home and

GARDENING FOR THE SUB-TROPICS

garden ; another is empire-building under a fiercer sun than his native land knows. It, therefore, seems right and proper that there should be a book to tell him, simply and completely, how his exile may be softened amid the sun-baked, sandy soils of his temporary home, by one of the means he would best love.

The long residence of one of the authors under such conditions, and her patient and practical observations of what can and what cannot be done, very fully equips her to instruct in the purpose of this little volume. I shall not readily forget my first visit, years ago, to her garden at Maadi, and my surprise and delight in the masses of bloom, and the orderliness of every detail, that had been so different to the slipshod methods of too many of the gardens I had seen under similar climatic conditions.

For those who are obliged to live in more torrid climes, and yet have a craving for a garden, this little book should prove an inspiration. So may it go forth, causing the creation of many gardens to the heart-gladness of both man and bird.

CHARLES WHYMPER.

AUTHOR'S FOREWORD

THIS book has been written for the beginner in the art and craft of gardening in the Sub-Tropics, and particularly the Cairo district. I hope, therefore, that those experienced in more easy climates may find help in adjusting their ideas on cultivation.

My original plan was to compile a gardening calendar, as the chief failures of the amateur arise from doing things at the wrong time. Notes on method were added, and other necessary information, with the result that the calendar-part threatened to be overweighted. It was therefore recast into sections, and grew to the book in its present form.

I am compiler as well as author. There are some short articles bearing the initials of the writers. The whole book is therefore not only impregnated with personal experience, but with the knowledge and observation of gardening friends who have freely placed their stores at my disposal. I should like to thank in particular Mr T. Brown, Mr E. de Cramer, Mrs Devonshire, Dr Keatinge, Mrs Marsham, Mr Walsingham, and Sir William Willcocks.

The contributions of my collaborator will be readily recognised by those who know her writings.

GARDENING FOR THE SUB-TROPICS

To her are due those sections on general management and culture.

I suspect myself of some unacknowledged plagiarism, for I could not always trace the source of my information, and I trust these unknown helpers will accept here my sincere thanks and apologies.

So "may this make more gardens lovely and more gardeners content."

M. S.

MAADI, CAIRO, 1921.

CONTENTS

	PAGE
PREFACE	7
AUTHOR'S FOREWORD	9

CHAPTER I

THE PLANNING OF THE GARDEN

THE CONSTRUCTION OF THE GARDEN.	18
THE PLANTING OF THE GARDEN	19
LAWNS	22
SPECIAL ROSE GARDENS	25
BEDDING OUT	28
ROCK GARDENS	29
WATER GARDENS.	30
UPKEEP	32
A PLEA FOR THE GARDENER	33

CHAPTER II

PROPAGATION

SEEDS	35
SOWING SEEDS	35
CUTTINGS	37
CUTTINGS BY AMERICAN METHOD	39
LAYERING, RINGING	40
BUDDING, GRAFTING, INARCHING	41
DIVISION	46
TRANSPLANTING	46

GARDENING FOR THE SUB-TROPICS

PAGE

CHAPTER III

HINTS ON MANURE	49
---------------------------	----

CHAPTER IV

FERTILISERS	55
-----------------------	----

CHAPTER V

PESTS

INSECT PESTS	58
FUNGOID DISEASES	61
RECIPES	62

CHAPTER VI

A SELECTION OF PLANTS

ANNUALS	64
PERENNIALS	71
PLANTS WITH BULBS AND TUBERS	75

CHAPTER VII

ORNAMENTAL SHRUBS

MEDIUM SIZED TREES	85
FINE TREES FOR LAWNS, ETC.	87
LARGE TREES FOR EXTENSIVE GROUNDS, ETC.	87
PERENNIAL CLIMBERS.	89
EXTERIOR HEDGES	94
INTERIOR HEDGES	95

GARDENING FOR THE SUB-TROPICS

PAGE

CHAPTER VIII

SPECIAL ARTICLES

ROSE NOTES	99
A BELEDI ROSE GARDEN	110
A FEW NOTES ON BULBS	113
BOUGAINVILLEAS	117
CHRYSANTHEMUMS	120
GERANIUMS AND PELARGONIUMS	129
INDOOR GARDENING	135
ROOF GARDENING	142
DAMPING OFF	145
KEEPING CUT FLOWERS FRESH	149
POTPOURRI	151
HOW TO MAKE YOUR OWN PERFUMERY	154

CHAPTER IX

A CALENDAR FOR THE FLOWER GARDEN	159
A CALENDAR FOR THE VEGETABLE GARDEN	174
A SHORT VOCABULARY OF ARABIC GARDEN- ING TERMS	189
BIBLIOGRAPHY	195
INDEX	196

LIST OF ILLUSTRATIONS

BEAUMONTIA	<i>Frontispiece</i>
DIAGRAM—INTERLOCKING GROUPS	PAGE 20
DIAGRAM—ARRANGEMENT OF INDIVIDUALS	20
TWO AND THREE-ROWED BEDS	26
"INTERSECTING" AND "SCATTERED" METHODS	26
PREPARED CUTTINGS	38
CARNATION LAYERS	39
RINGING PREPARED	40
BUDDING	41
WHIP GRAFTING	42
INARCHING	43
"BORDER" PLANTS	123
PERFUME STILL	154

PUBLISHERS' NOTE

A need expressed by so many amateur gardeners resident in the Sub-Tropics, and on the Equatorial highlands, has now been met by the appearance of this valuable addition to the horticulturist's library. The authors' purpose has been to compile a gardening book from many useful sources, as well as from personal knowledge and wide observation, which will be, despite differences of soil and methods of irrigation, of considerable service to possessors, or would-be possessors, of flower and vegetable gardens living between the parallels of 30° N. and 30° S.

A BOOK OF GARDENING FOR THE SUB-TROPICS

CHAPTER I

THE PLANNING OF THE GARDEN

It is impossible to give direct rules for laying out a garden. No two pieces of land can be exactly similar in shape, size, surroundings, and the houses to which they belong, and every new garden provides its own problem. However, there are certain directions which, if ignored, will give bad results.

1. Do not forget that house and garden belong to each other, and that the garden is mostly seen from certain fixed points within the house.

2. Do not make curved paths where straight ones are of more obvious use.

3. Where a curved path is required do not let two curves be visible at the same time.

4. Do not make a path end without any reason. It should connect with another, or lead to some object such as a seat.

5. Do not carry raised paths across grass. Flower or shrub borders will disguise the edges.

6. Do not make pergolas except as a shady walk from one point of interest to another.

7. Do not introduce rough "picturesque" features in close proximity to the house: such

GARDENING FOR THE SUB-TROPICS

effects are best kept to the outskirts of the garden.

8. Do not be afraid to cut away a tree or shrub whose size or shape spoils the general proportions.

9. Do not plant anything merely because you feel you must possess it. Consider how it will look with existing planting. People who have the acquisition mania should have a part of the garden devoted to this special purpose.

10. Do not overplant. The effect is as unrestful as an overfurnished house.

The old landscape gardeners took as their watch-word, Utility, Proportion, Unity, and it will be seen that the foregoing "don'ts" are simply special directions to avoid violating these principles. A garden with which no fault can be found under these three headings is nearly certain to give satisfaction.

THE CONSTRUCTION OF THE GARDEN

The exterior hedges and tree screens should be planted directly the plot is acquired, and if this is a year before the house is built, so much the better. If a plan of the future garden has been prepared, specimen trees for the lawn (not too near the building) and distant shrubberies can also be planted, but unless the site and plan of the house is known, of course a garden plan is not possible, and it is useless to plant trees which may be regretted or handicap the design.

When the builders are safely off the premises garden-making can begin in earnest. First mark out all beds and borders which are to have special soil preparation, as the carrying in of materials cuts up the ground badly. The amount of preparation given depends on the natural condition of the land, and on the money question. The best method is to excavate the beds one metre deep and replace with soil from old cultivated land near the

PLANNING OF THE GARDEN

Nile, or silt from its banks plus some old stable manure. Or the beds may be loosened eighteen inches, and enough good soil dug in to darken the colour, and as much manure as can be afforded. Sometimes the sand of the garden is impregnated with salt, which in any quantity is fatal to plant life. It should be excavated and laid upon a slope, and water turned on, when much of the salt will be rinsed out, and the sand can be returned to the beds with good soil and manure added. Positions for roses, flowering plants, and shrubs need better preparation than those for trees.

Brick pergolas or any stone-work should also be constructed at this stage.

When heavy traffic is done with make the paths. These have to be slightly raised or the garden is useless while irrigation is in progress. The usual material is simply red or yellow sand beaten hard, but flat stones or bricks are preferable.

Complete the planting if the season allows, and finally prepare and sow the lawn.

THE PLANTING OF THE GARDEN

When the position of the paths, lawn, shrubberies, flower-beds and other features have been arranged, the next problem is what to plant. At this point a definite policy must be laid down. Is the garden to be planted with a single eye for beautiful effects, or is it to be a home for interesting plants, for experiments in horticulture, and pride in growing difficult subjects? The two are incompatible. A piece of ground may be set aside for the collective style of gardening, but it cannot be combined with the æsthetic. This is not to say that one is more legitimate than the other, but simply that an attempt to collect artistically means a poor collection and very little art. The list of desirable plants beginning on page 64 has been compiled largely from the æsthetic standpoint.

GARDENING FOR THE SUB-TROPICS

Many things are included which the collector would scorn as common, and others left out which may bear beautiful flowers, but which have some fault of habit or health which detracts from their effect in the garden.

We will suppose then that this garden is to be planted for beauty. Have each bed and border drawn to scale on paper in proportions large enough to enable names to be written in. Numbers and a

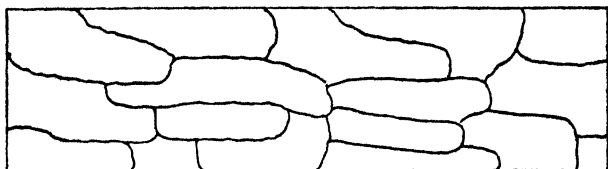


Diagram showing shape and interlocking of groups in a flower border.

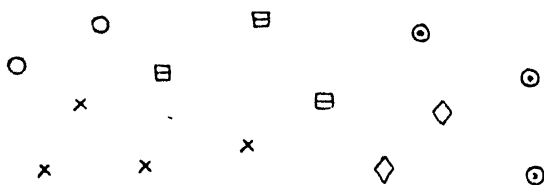


Diagram showing arrangement of individuals in a shrubbery.

chart may serve the very clear-headed, but most people manage better with the names in position. Shrubberies and tree plantations should be divided into ten-foot squares. This gives you at a glance the size of the groups, and afterwards will make it easy to count how many individuals will be needed for each group.

Now consider the main divisions of decoration—harmony and contrast. There is harmony when two different objects possess one or more characteristics in common. For instance, brown leaves and orange flowers harmonise, as both have

PLANNING OF THE GARDEN

red in their composition. A contrast is formed when difference is complete, and in plants contrasts are not only of colour but of height and habit also. In planning your groups you should know whether your taste is for contrast or harmony, and if you like both effects, keep clear in your mind which you are producing. Merely to feel vaguely that certain plant "will look nice together" is likely to lead to confusion.

Take first the tree-planting on the outskirts of your ground. These are to give privacy and to serve as background or frame to the garden, and should be selected for the neutral tones of their foliage. The quieter this outside planting is, the larger your plot will look. Grey and deep green are especially useful, but do not intermix them. You are not tied to few varieties, but keep trees with the same toned foliage in blocks. Silhouette effects against an evening sky are worth contriving.

Next come the shrubberies. Much more has to be borne in mind now—colour and time of flowering, habit, foliage, and height. The choice of colour will be somewhat limited by the tone of the tree background. For instance, blues and scarlets are particularly effective in front of any grey trees. A shrubbery border generally contains more than one row, and there is no need to be too rigid about placing all short growers in front and all tall ones behind. If the short ones run back occasionally and the tall shrubs come forward you will obtain a soft outline even though the bed itself be straight. The question of deciduous habit is difficult to manage. On the whole it is better to keep those that are leafless at the same time in company. This avoids the danger of spottiness, although that part of the planting must look poor for the season. If you have any special favourites and want many of them, indulge your taste by having very large groups, not by many individuals scattered throughout the garden.

GARDENING FOR THE SUB-TROPICS

Lastly, plan out your flower borders, and now the undertaking has become really complicated owing to the splashes of colour already introduced by shrubs. The groups should be elongated. To put three or more plants in a circle produces merely the effect of one very large plant, and you want the colours to interlock and overlap. Part of the interest of these definite planting schemes is that one always feels sure that next season there will be no mistakes, as every year one becomes more experienced in cultivation, and more observant of possibilities.

Finally here are a few "tips."

Remember green is a colour.

The introduction of grey, white or soft mauve enables you to make a fresh start in your colour arrangement.

Short blue flowering plants assume a different tone of blue if run back so as to catch shade from the medium growers in the second row.

Never repeat a combination, however effective.

Try not to use the same plant or shrub over again. There is probably something sufficiently alike to serve your purpose.

Preserve your open spaces of lawn. The most lovely bed of flowers is dearly bought at the expense of space.

Spottiness is the deadly fault. White and scarlet are the most likely offenders among flowers, and variegated foliage among shrubs.

LAWNS

Whereas grass is the chief glory of the garden in England, so lawns of emerald green in this arid land are distinctly the crowning feature. The full beauty of the grass rests with the management of the grass space, and the purity of colour is a refreshment to the eye as well as a perfect setting to every other colour. Grass in shadow is even

PLANNING OF THE GARDEN

more beautiful than in full sunlight, and a few good trees or groups of shrubs should be arranged on the lawn, but one must be careful not to overdo this or a restless, spotty effect will be produced. Planting is best kept to the sides so as not to interfere with the look of space that grass should give. Of course where lawns are laid for games, planting must be entirely a secondary object.

TO PREPARE THE GROUND.—Dig well and give a heavy dressing of manure. Carefully rake and level, removing all small stones, clods and weeds, which should be taken out with their roots. Divide the space into beds for the purpose of irrigation, after which, when the ground is sufficiently dry, relevel.

PLANTING THE LAWN.—Lawns may be of three kinds—Negil (*Cynodon dactylon*), *Lippia citriodora*, both of which are perennial, and a special mixture of grasses which has to be renewed annually. For Negil make deep drills across the prepared ground about three inches deep and nine inches apart. Lay the Negil roots in the drills, cover with soil, rake all smooth, and water. It is important that the roots should be absolutely buried in order that every joint shall send out shoots. May and June are the best months, but it can be done as early as April and as late as September.

Lippia is dibbled in the same as Negil. May and June are the best months, so that it may have the full benefit of the hot weather for growing.

Grass seed is sown at the rate of fifteen kilos to the square metre. The ground must be in a friable condition, and the day windless. Sow the seed broadcast and spread old stable manure over it. Water with a very fine rose morning and evening until the grass is well established. The end of October is the best time.

Negil and *Lippia* lawns are at their best during the summer, and begin to look brown during the winter. The grass lawns are beautiful during the

GARDENING FOR THE SUB-TROPICS

winter, and begin to die out in April, leaving a dusty bare space for the summer. A lawn made of both Negil and annual grasses will get over this difficulty. The Negil is planted in May, and is well established by October. It is then mown closely, the ground severely raked, and grass seed sown and covered with a thin layer of good soil and manure. The young blades soon appear, giving a brilliant green lawn during the cool weather, at the same time maintaining the Negil roots. These shoot forth in the spring at the time when the annual grass is perishing.

NECESSARY PARTS OF A GARDEN

An English pleasure garden may be regarded as complete if it has lawns, paths, trees, and well-furnished borders. In a hot climate the following features need to be added:

WIND-SCREENS.—Too much stress cannot be laid on the importance of these, for wind has a devastating effect on vegetation. If the garden is large enough to carry a thick belt of trees around it these will suffice. Small gardens can have hedges or walls, but a well-grown hedge protects better than a wall. While cutting off the wind, sunshine must be diminished as little as possible, and the screens on the south side should be made rather lower. Interior wind-screens can be contrived by trellis or hedges. Some of these within the garden not only provide shelter but, judiciously placed, make the plot appear larger. The ends of a hedge or trellis are very draughty positions, like the house corners, and this must be remembered in arranging the planting.

A SOBA, or its equivalent, which is a covered-in alley or enclosure.—The sides are either hedge or trellis, and the roof of poles covered with climbers, or palm leaves, its purpose being to provide a shady wind-proof shelter for young

PLANNING OF THE GARDEN

seedlings and resting plants. Its size would depend on the amount of propagation likely to be needed. A staging on the step principle gives more accommodation than the bare floor.

A PERGOLA or a contrivance for supporting climbers.—The house walls are not sufficient for the wealth of climbers available, nor are they all at their best on walls. The set pergola is justifiable only as a passage way, but a screen can nearly always be introduced. Failing that, one can have a row of poles, *either isolated or connected by rope.*

A RUBBISH PIT must be contrived in a secluded corner. It should be about twelve feet square and six feet deep, and handy to the water supply. Into it is put all garden refuse, the ashes of burnt prunings, soapy water from the house, and at intervals, as the contents accumulate, thin layers of soil. The whole should be thoroughly flooded at least every four weeks, and in six months there will be a supply of leaf-mould.

SEATS.—Plenty of these should be provided. They should be placed in shelter, shade and privacy, and where good views of the garden can be had.

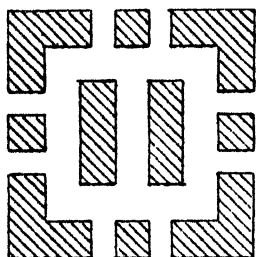
The foregoing are necessary adjuncts to the garden. Other features merely for luxury can be rose gardens, bedding out, rock and water gardens.

SPECIAL ROSE GARDENS

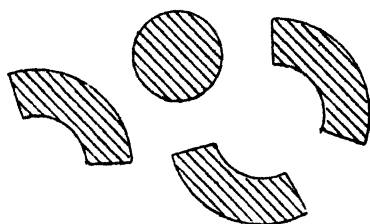
The ordinary mixed rose border will provide plenty of flowers for cutting, but the decorative value of roses as part of the planting is best seen when special rose-beds are prepared on grass in set design. A difficulty arises when grass is used, as the roses will need rest by drying-off, whereas grass requires constant irrigation. If the annual grass is used it can be allowed to perish at this period, and be re-sown in the autumn. Where this is considered too expensive or troublesome,

GARDENING FOR THE SUB-TROPICS

the beds must be set in stone or beaten earth surrounds. The design should be quite simple, and such that the roses are easily accessible. Length does not matter. The most convenient widths for robust growers are 1.5 metres to carry two rows of

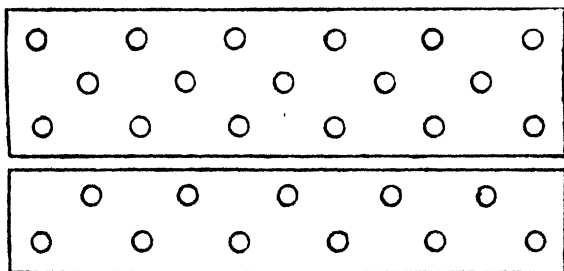


"Intersecting path" method.



"Scattered" method.

bushes: 2.25 metres for three rows: 3.00 metres for four rows, and 3.75 metres for five rows, after which it is awkward to reach the centre, and with five rows it is better for the middle row to be standards. The 2.25 metre bed really plants best of all, as with three rows the corners are well furnished. The diagram of the two-rowed beds shows its



Arrangement of two and three-rowed beds.

disadvantages. Circular or curved beds cannot be spaced with the same regularity, but the same 3.75 metre limit of width applies.

The design should be first made on paper,

PLANNING OF THE GARDEN

drawing it to scale and paying attention to the shape of the grass background. At least 1.5 metres should be allowed between the beds, and if the sides of beds are parallel to one another so that they seem to be intersected by paths, the effect is more compact. An arrangement of beds may also be a scattered one. Two illustrations are given showing a type of each method.

A formal rose garden should not have the beds mixed in colour, and one variety only in each is the most satisfactory. Sometimes two roses are sufficiently alike in colour and habit to be planted together, but on the whole it is wiser to keep to one sort chosen for its constant blooming, clean colour, and good habit. Catalogues frequently describe roses as "good for bedding," which means that though the individual flowers may not be fit for exhibition, the whole bush is effective.

As regards the position of a set rose garden it should not be overlooked by the principal windows, as it has uninteresting phases: after pruning, and again when the best of the flowers are over, and when set on grass, there is a very barren period when the grass is sharing the drying-off process. The position should not be too far from the house, as its conventional lines belong properly to buildings. A formal rose garden can be introduced into the remote parts of a naturally planted garden by surrounding it with a hedge which is concealed by shrubberies on the outside. This makes a very pretty and unexpected event at the end of a path.

It is impossible as well as undesirable to attempt a list of suitable roses. Such a list would be out of date very soon. Mildew is the worst trouble, and no rose can be satisfactory if liable to it. Of the different sections the hybrid perpetuals are the most prone, hybrid teas less so, and teas least of all. Among climbers the Wichuriana section is useless in Cairo though so delightful in England. They bloom late, are soon over, and are extremely

GARDENING FOR THE SUB-TROPICS

susceptible to mildew. Climbers that give general satisfaction are L'Idéal, Maréchal Niel, Mme. Jules Gravereux, William Allan Richardson, and Reine Marie Henriette.

BEDDING OUT

The term "bedding out" is applied to the method of planting flowers in formal groups, which are changed several times during the season, the idea being to provide a broad colour effect rather than to exhibit individual beauty. Plants for this purpose are reared in the *soba*, or elsewhere, and transplanted. When shabby they are replaced. Any plant of neat habit and conspicuous flower is suitable for bedding. Among the best are antirrhinums, begonias, geraniums, pansies, phlox Drummondii, petunias, stocks, verbenas. These can be had in pure bright colours, they are patient of transplanting and, except the antirrhinums, do not need stakes.

Bedding out has to be really well done to be worth doing at all. The commonest cause of failure is lack of material. At least twenty-five per cent more plants should be raised than are required. This enables any that are not up to standard to be discarded. The calculation of quantity is simple arithmetic when one knows what space to allow per plant, and the best basis for this is to allow the height of the plant between each row. When the flower is a spike the plants need close packing for effect, and two-thirds of the height should be allowed. Heights are given in good catalogues.

It is difficult to recommend combinations of colours, as this must be a matter of taste, and there is as much scope for originality in bedding as in any other form of decoration. Some people like the broad effect of one colour only in a bed, some like two colours either as harmony or contrast.

PLANNING OF THE GARDEN

Some add a border all round. In arranging a contrast it should be remembered that effective use can be made of different heights, and that foliage contrasts are worth consideration.

As regards position, bedding out schemes should be within sight of the house. The formal beds which every garden possessed during Tudor times were designed on the same lines as the house, reproducing the shape of the window-frames and the patterns on the chimneys, and this is the right idea when it can be carried out. Modern architecture does not often lend itself to such adaptation, but in any case an elaborate design should never be attached to an unpretentious building.

ROCK GARDENS

There are plants which require better drainage than a flat surface affords, or whose special beauties are displayed to advantage from an elevation, and for such an arrangement of stones is desirable. In England a rock garden provides an opportunity for growing an immense range of Alpine plants, but in hot climates the cacti and mesembryanthemum families are all that such treatment can be said to benefit. Although these are large and varied families it means that a rock garden is more for scenic effect than botannically interesting.

In making a rock garden two points must be borne in mind, that the stones are for sustaining the soil (not to replace it) and that they should look like a natural formation.

The first point is easily managed by using as few stones as possible and only where a change of level occurs, the stones being laid as a miniature wall supporting the terrace of soil behind.

The second point requires experience and observation. The commonest mistakes consist in setting stones on edge as though they were tomb-

GARDENING FOR THE SUB-TROPICS

stones, and in laying several lines of stones over each other with the cracks not coinciding. A crack would naturally traverse the face of a rock from top to bottom, and to arrange the joints otherwise gives an artificial effect like masonry. Moreover, the plants drive their roots into the crevices, and continuous ones give them good positions.

A rock garden's chief charm is its natural appearance, and it is therefore out of place near the building. A change of level is necessary to achieve a really good result, and by digging a miniature valley or hollow and piling the soil at the sides this is easily obtained. A further effect of height can be procured by planting tall subjects such as aloes and opuntias on the crest of the mound. In no case must garden varieties of flowers be introduced.

WATER GARDENS

Even in cool climates water has always been considered to give the finishing touch to the charms of a garden, and, in spite of mosquitoes and frogs, it is still more valuable in a hot climate. It may be introduced either as an architectural feature or in the naturalistic style.

In the first case stone or concrete basins are made of a shape to fit in with the surroundings, which would be either formal bedding or clipped hedges. The effect is particularly good when the pathways are paved and the water level arranged to be flush with the paving, thus giving excellent reflections. A deliciously cool appearance can be obtained by contriving that only green reflections from a hedge shall appear in the water. Indeed, where water lilies are to be a feature, care should be taken that there shall be no coloured reflections from neighbouring beds.

Informal pools are suitable for more secluded parts, and are charming in conjunction with a

PLANNING OF THE GARDEN

rock garden. The outline should be irregular and simple. The bottoms and sides may be concreted or puddled with clay, which on the whole is less expensive.

At least fifty centimetres of clay must be laid over sides and bottom. This is not difficult to do, though laborious, as the clay must be well kneaded, and none of it must be allowed to dry at any time, as the least crack will spoil the work. The edges of the pool can be finished with stones set into the concrete or the clay. If the latter, some cement will be required to make the stones secure.

Water basins should not be less than one metre in depth, or the difference in temperature between day and night would be too great. Plants are introduced by being tied up in baskets of soil and sunk where required. Or the bottom may be spread with forty centimetres of good loam, and the plants allowed to root themselves. This is the more usual way when the pool is puddled. Some clean gravel is laid over the soil to prevent any motion in the water from stirring it up.

If the water is to be changed, a definite outlet must be provided. Concrete basins are best fitted with a pipe with open mouth at the water level, and passing through the side, where a broken edge does not matter, as in the case of informal pools, the water may be allowed to overflow at a hollowed part, and if a small streamlet can be contrived from the escaping water, so much the better. In-coming water may enter either at the bottom of the pool through a pipe, or over the edge. A low entry ensures a more perfect change of water. It is possible to dispense with an overflow, trusting to evaporation and the necessary replenishing to keep the water sweet. In any case goldfish should be kept. They feed on mosquito larvæ and small water weeds.

Suitable plants for growing actually in water are water lilies (*Nymphæa*), lotus, ginger lilies

GARDENING FOR THE SUB-TROPICS

(*Zingiber officinale*), water hyacinth (*Eichornia speciosa*), cape pond weed (*Aponogeton distachyon*). The two last named must be kept well under control as they spread very rapidly. In shallow water or boggy parts, at the overflow bamboos, papyrus and ranunculus will thrive.

Miniature water-pools can be made out of baths or tubs sunk in the ground. They should be painted a good blue inside, and stones or creeping plants put round to disguise their edges. A tiny notch will provide an overflow place if desired, and they can be filled by hand. The miniature water lilies (*Laydekeri* group) do well in such small basins.

UPKEEP

When the garden has been laid out and planted the question of upkeep arises. *The whole art of successful gardening lies in doing operations before they are really necessary.* This entails knowledge, but a "calendar of operations" is a great help. Besides the special seasonal work, some sort of time-table should be made out to cover the ordinary routine, which comprises hoeing, watering, staking, removal of dead flowers, pruning and mowing. Hoeing is put first, being the most important, for by maintaining a surface of loose soil, evaporation from below is checked, and incidentally weeds are destroyed.

The garden should be divided into sections so that during the week (or a ten-day period) it all receives attention. A day for the grass, and another for the sofa is included in this.

The gardener's day should be arranged somewhat after this fashion : First see to the irrigation, and while this is in progress attend to the plants in pots for watering or moving into the sun or shade as required. Follow on with a general overhauling of that part of the garden to which the

PLANNING OF THE GARDEN

day is dedicated. Should there be any time free between the finish of this and the final evening watering it can be given to a part that is in arrears, or to something particular like hedge trimming. Of course a certain amount of elasticity is allowed. For instance, the day on which the soba is overhauled may not give sufficient time if the chrysanthemums have reached a repotting stage, and two days' work in other parts may have to be merged in one to allow for this. And where irrigation must affect the whole garden at once, a day may have to be given up to hoeing alone, or parts might not be in condition, but the chief point of a plan of action is that no part of the garden should be neglected, and even if work seems unnecessary it should be done when the day comes round. By this means one is prevented from the worry of being behindhand, and pests and weeds have no chance of establishing themselves. Native gardeners are extremely liable to overlook the first signs of pest attacks, being generally unobservant and unwilling to take trouble until the matter is urgent. Prevention is better than cure.

A PLEA FOR THE GARDENER

In the first place be sure you have a gardener. A small boy whose chief qualification is that he cleans your bicycles may be full of zeal, but do not expect great results from his efforts unless you have the knowledge and the time for constant supervision; also remember that you will be away during the critical times of the gardening year—the summer months—and unless he can take the initiative then he is of little use to you.

If you have engaged a man of experience, pay him properly and trust him until he proves himself unworthy. Make him feel a pride in the garden, which he will if he knows he is responsible for it.

GARDENING FOR THE SUB-TROPICS

Praise him before others, however much you may curse him in private. Take him about with you when seeing gardens and shows. This raises his standard, widens his outlook and gives you both a basis for discussions.

Let him obtain any plants, seeds, and accessories you want. Of course he will make something on the transaction, but direct purchase would only benefit the seller, not you, and your man will take greater interest in what he himself has bought. Do not stint him in plants or manure because you think the wages you pay are a sufficient outlay on the garden. If you wish to restrict outlay to a definite sum, make up your mind beforehand how much of it shall go in wages and how much in material.

The question of exchange sometimes raises difficulties. All keen gardeners give each other seeds and cuttings, and if you do not care to see your plants duplicated in your neighbours' gardens then you will get no unexpected treasures in your own. In one of his books Dean Hole points out the advantage of giving away plants, for should your own stock perish you know where to renew it.

CHAPTER II

PROPAGATION

SEEDS

SEEDS require moisture, air, and warmth for germination, and all directions on sowing are merely in order to secure these conditions. Light porous soil provides the ideal medium. Seeds will start into growth on wet flannel, damp wood, or a cleft in a wall, but the young plant will have a short life. Well prepared soil gives the right conditions for germination, and also sustains the young plant without further trouble.

SOWING SEEDS in PANS

Ordinary garden earth holds sufficient nourishment for the future plant; leaf-mould has a certain amount of food value, but is chiefly useful owing to its power of retaining moisture; clean sand always has air entangled between the grains. So make up your special mixture with one and a half measures of soil, one of leaf-mould, and half of sand. Mix thoroughly and, to ensure no lumps, pass through a sieve. Earthenware pans or pots are in every way preferable to boxes. They should be washed and dried before use. Over the hole at the bottom put a piece of broken pot, curved side downwards, and lay several more pieces over it and at the sides, then cinders, charcoal,

GARDENING FOR THE SUB-TROPICS

or quite rough leaf-mould, and then the soil. Press this down until it is firm, but not hard, and soak the whole with water until it comes out at the bottom, and let the pots stand in the shade until the soil is no longer sticky. For the actual sowing, begin by roughing up the surface of the soil, and take out a little for covering, scatter the seeds thinly and sprinkle soil over, and *press very lightly*. The bottom of a pot does this better than one's fingers. The depth of the covering depends on the size of the seed. Sweet peas may be half an inch below the surface, and poppy seeds need the merest sprinkling. The finished pan should have the soil three-quarters of an inch below the rim. Place in the soba and cover with mats or other shading material, but do not water until the surface appears to be drying. In January and February seed pans can be placed in the sun for the sake of warmth. After two or three days water will be needed, and should be given gently with a fine rose. If the pans are standing on the ground give water until it comes out at the bottom, but if they have been bedded in cinder, which is the best way, the quantity can only be guessed. Directly the seedlings appear give light, first by reducing the shade, and then by removing it altogether in the evening until late morning. The more light the plants are given the better constitutions they will have. At no time will they thrive in wind, so, as their top coverings are removed, side shelter must be contrived. Sunk pans will probably need watering only in the evenings, but those on bare ground may need it in the mornings as well. The constant wetting tends to cake the soil and defeat the care that was taken to make it porous. A weekly sprinkling of fresh soil or powdered charcoal will prevent this trouble.

PROPAGATION

SOWING SEEDS IN THE GROUND

Dig the chosen position eighteen inches deep, taking out weeds and breaking up lumps, and raise a ridge round the place to control the watering. Three inches of special soil must be provided, so take out that amount and make a mixture of two of earth to one of leaf-mould or alluvial soil, and return it. Rake a smooth surface and run plenty of water on to soak well through to the bottom, and leave it alone for two or three days. Proceed as for sowing in pans, except that where the seeds are not minute it is best to sow them in rows, making shallow drills. It is easier to look after and weed, or transplant from rows than when the seedlings are growing anyhow. Very small seeds should be mixed with sand before sowing, otherwise they are likely to be sown too thickly. A sieve distributes the covering of soil more evenly than the hand. Shading is required for these seeds as for those in pans, and sticks must be inserted over the beds to prevent the mats or palm leaves resting on the soil, and the shade must be gradually reduced until it can be taken away altogether. It must always be taken off in the evenings to let the dew fall. *On no account must watering be done until seedlings appear*, and then a fine rose must be used. The plants must have attained three or four inches before being irrigated. Top dressing with leaf-mould when the plants are finally exposed to the sun is very beneficial: in no case use stable manure for this purpose as it is very heating.

CUTTINGS

Owing to the fact that most plants consisting of stem, leaves, and root can reconstruct the perfect system if deprived of one or more parts, propaga-

GARDENING FOR THE SUB-TROPICS

tion can be effected by pieces known as "cuttings." The commonest form is the stem cutting possessing leaves and stem on which roots will develop. A leaf cutting will provide itself with stem and roots, and a root cutting will throw up stem and leaves. Success in such methods of propagation



Prepared Cuttings (1) Stem.
(2) Root.
(3) Leaf.

depends on keeping the existing part in health until a perfect self-supporting plant is formed. Some of the functions remain active—such as transpiration, which entails continual loss of moisture—whereas the absorbing capacity is in abeyance. Hence the necessity for shading cuttings, or reducing their leaf surface, or covering with air-tight bell jars, or any other contrivance for checking transpiration. A great danger is the entry of disease at the cut surface. To fight this, cuttings are placed in sand, so that wet shall not cling to the exposed cells, or they are left to dry off in the air before planting. The sand serves another purpose, for by its porous nature it holds a supply of air, and oxygen has a healing virtue. The food material necessary for the growth of new parts must be self-contained, as only the perfect plant can manufacture food from soil and air, and this is found in the enlarged joints of stems, in the thick veins of leaves, and in the fleshy roots.

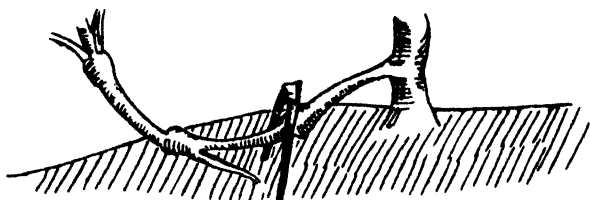
PROPAGATION

When a cutting is "taken," the cut is generally made at the joint in order that the new growth may be close to its food. Leaf cuttings are only possible where the veins are very thick (as begonias). The veins are gashed where they fork, and pressed into sandy soil. Root cuttings should be laid on their sides if there is any doubt as to which end up they should be planted.

Directions for taking cuttings often contain such expressions as ripe, half-ripe, and unripe wood, and say which of these stages is most likely to be successful. Ripe wood has attained maturity, and is firm and well coloured, but has not passed into the hard bark condition: unripe wood is still green and sappy: half-ripe, of course, is between the two. If you look at a full-grown rose shoot you can see the three degrees of ripeness plainly displayed. Sometimes a "heel" is recommended. This means a bit of the main stem adhering to the base of the cutting. By tearing the piece off with a scrap of old bark one gets the full advantage of the food store at the joint, and also a less susceptible wound surface.

CUTTINGS BY AMERICAN METHOD

For a large number of cuttings to be raised in a limited space, prepare the cuttings six inches in

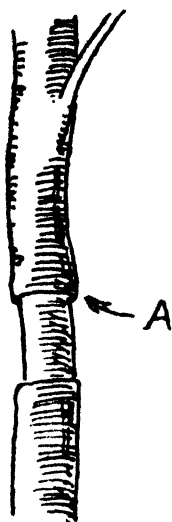


Carnation layers.

length, cut close over the bud at the lower end, and strip off all leaves. Tie in bundles according to

GARDENING FOR THE SUB-TROPICS

names of varieties. Prepare a mixture of cow-dung and water to the consistency of cream, then



Ringings prepared.
The roots are produced from A.

dip the lower end of the cuttings in it. Get a deal wood box two feet by eight inches by twelve inches, into which put three inches of ordinary garden soil. On this stand the cuttings with their *bottom ends upwards*, and between the spaces fill in ordinary soil to within an inch of covering the cuttings, pressing down firmly. Now take a compost of three parts common soil and one part sand and fill up the box to the top, thus *entirely covering the cuttings*. Place the box where it can have the sun. Watering sparingly so as just to keep three or four inches of soil on the top moist, but *not wet*. In about seven or eight weeks almost every cutting will be found to have thrown out roots.

To take them out turn the box over and lift it off, when the soil will fall away and disclose the cuttings, which should be potted off singly into small pots as quickly as possible, and placed in a shady situation. The idea developed in this method is to utilise the heat of the sun for bottom heat, for the cuttings being placed bottom upwards secure this. Select well-ripened wood for cuttings.

LAYERING, RINGING

Certain plants root so slowly from cuttings that it is impossible to keep the piece alive long enough. In these cases "layering" and "ringing" are employed. In layering a joint is half

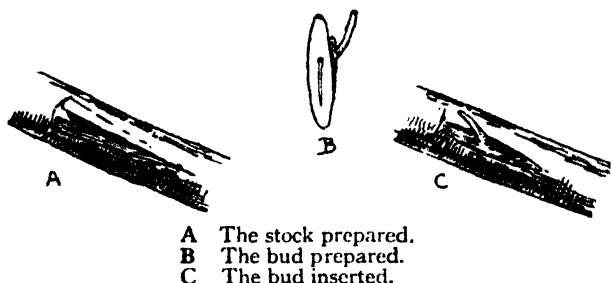
PROPAGATION

cut through and the gash pressed into sandy soil. While roots are growing sustenance is still being conveyed from the parent plant, and when sufficient roots have formed, severance is completed. Carnations are commonly propagated in this way, though with care cuttings are successful.

Layering depends on the plant being flexible enough to be brought into contact with the soil. Shrubs are often too rigid, and with them the operation known as "ringing" is performed. A strip of bark about three-quarters of an inch wide is peeled off all round the stem, and the wound encircled with a specially constructed tin containing soil. This is kept moist by syringing and shading, and when new roots are seen to be working through, the piece is cut off and planted.

BUDDING, GRAFTING, INARCHING

The cells of one plant are capable of fusion with the cells of another plant of allied species, and budding, grafting, and inarching are means of propagation that depend on this fact.



Budding is commonly employed for roses. Where a leaf joins the stem a small bud can be seen, and tiny as this is it contains all the structure of a rose bush except roots. If united to another stem furnished with roots it will be nourished by

GARDENING FOR THE SUB-TROPICS

the sap, and a perfect plant will soon be formed. The procedure is as follows: Cut off the leaf except the plain stalk, which is needed as a handle. Put a knife about half an inch above the bud and



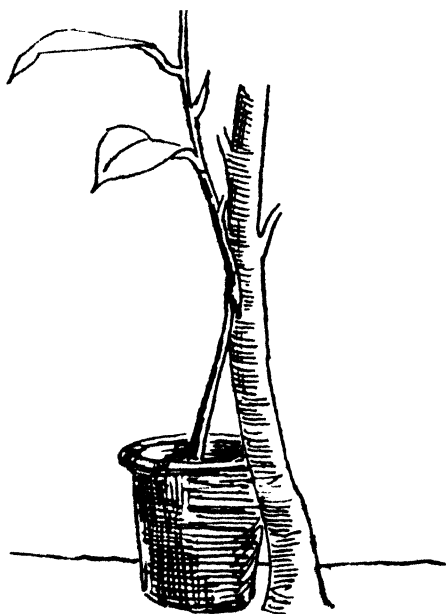
Whip grafting. The scion shows black and inserted at side of stock, which is slightly larger in diameter.

cut it out from the stem with about an inch of bark altogether. You now have a little boat-shaped piece of stem with bud and leaf stalk on one side and backed by wood. Bend the bark away from this wood and slip it out, which should leave you with the bark and a green thong running into the bud. To pull out the little plug of wood without the thong is rather difficult, and the thong *must* be left behind, as it is the bundle of cells through which the bud draws its food. Put the prepared bud in your mouth while getting ready the stem of the stock. Make a T-shaped cut through the bark, turn back the cuts where the flaps meet, and slide in the bud. Bind it firmly with bast. In about ten days, if all is well, the bud will begin to swell, and the ties will have to be loosened. The operation of budding requires neatness and pace, as the delicate cells quickly dry off when exposed to air. Even with the sharpest knife it is difficult to avoid tearing the bark when taking the bud from the original stem, and this and drawing the wood out should be practised before attacking the real thing.

In grafting, a piece of stem with several buds on it is joined to a stem. Immediately under the bark a delicate bright green line may always be seen which is the layer of *cambium* cells, whereby

PROPAGATION

all growth is made. On both stock and scion these layers must be in contact or no fusion can take place. If stock and scion are of the same diameter this is easy enough, but if, as often happens, the scion is smaller, then it must be bound to one side of the stock so that it will fuse up one edge. Any method that brings the cambium layers into contact and excludes air will produce a successful graft. A very ordinary form is that shown in the diagram. The double cut helps to steady the union, but otherwise has no special virtue. After binding, the cut surfaces are smeared with wax, or the whole is encased in clay. Grafting may be the union of a stem with a rooted stem, or of a



Inarching.
The binding of stock and scion has been omitted.

GARDENING FOR THE SUB-TROPICS

stem directly with a piece of root. The latter is sometimes performed with roses.

Inarching bears the same relation to grafting as layers do to cuttings. In this case the scion is not a severed stem, but is bent from the living plant and forced into contact with the stock, and is not separated until well united. Plants whose cells work slowly and feebly can safely be inarched.

Before the operation of inarching is commenced, possibly both stock (the plant upon which the other is grafted) and scion (the branch which is grafted on the stock) may require to have some of their leaves removed from the part of the stem where the union is to take place. For the stock the leaves are cleaned off near the base of the stem, whilst for the scion they are removed from a place near the growing point. When this has been done, take the scion and slice a portion about four centimetres in length from where the leaves have been removed. The cut should not be deep, but just sufficient to expose a little of the inner tissues. After this take the stock and remove a similar portion to that of the scion from the cleaned part of the stem. When both stock and scion are ready place them carefully together and tie with raffia or string. Over this wrapping put wax or clay which prevents moisture from penetrating to the graft. Care must be exercised to ensure that the cut surfaces before being joined are free from grit or water, as the presence of either is prejudicial to the union of the two stems.

After the inarching is performed allow some time to elapse before detaching the grafted branch from its parent. The period required for a good union to be effected varies considerably with different plants, but when it is noticed that the stems directly above and below the union are beginning to swell it can be taken as a sign that

PROPAGATION

the grafted branch is in a fit condition for detachment from the mother plant.

The operation of separating must be done by degrees. First of all cut a small notch out of the branch just below the union. This will partially arrest the sap going to the graft. At the same time "head back" the stock, thus diverting the sap which is coming from the roots of the stock and sending it into the newly grafted branch. After doing this wait a week or two before totally severing the scion from its parent.

After the grafted branch is detached all growth of the stock above the union should be taken off. The newly grafted plant when removed should be placed in shade and the foliage occasionally sprinkled with water to prevent excessive transpiration. It is advisable to support the grafts by a stake for a year or more, otherwise high winds may cause the plant to break at the union.

The best season for inarching is the spring or autumn, as then growth is active and plenty of sap flowing, which is essential for the success of the operation.

The plant which is used as the stock should always be well rooted and healthy, as it is useless to attempt to inarch upon a sickly plant. When selecting the stock it should be borne in mind that the thickness of the stem must be as near as possible the same as that of the scion. It may possibly happen that the width of the cut surface of the stock is greater than that of the scion. The best plan in such a case is to place the cut surface of the scion so that one of its edges comes in contact with the plant of the stock, at least one edge.

Some plants unite much easier than others. For instance, the Mango "takes" readily, and only requires about a month before it can be detached from its parent. On the other hand Bougainvilleas are extremely slow to unite, and

GARDENING FOR THE SUB-TROPICS

there is often a lapse of six months from the time of grafting till the plant is separated. It has been found that the majority of hard-wooded plants take the longest time in joining.

F. G. W.

DIVISION

Many plants are increased by division, which, when possible, is the surest method of all, as the divided piece starts complete in itself with roots and stem. Such plants as *Amaryllis*, which throw off bulbs from the parent plant until a great cluster is formed, or violets, which make rooted tufts, are examples of the kind of growth which lends itself to division. The process is very simple. Water the plant a few hours beforehand and lift with a good ball of soil. Gently shake away the soil till spaces between the stems can be seen. Insert a knife or trowel and carefully work it in until a piece separates. If the lump is very tough two trowels or hand forks placed back to back can be used as a wrench.

A certain amount of injury is inevitable, and the new plant is sure to flag at first owing to the roots being unable to supply the moisture lost by transpiration. To keep drenching with water which the roots are unable to take in is a frequent cause of rot. The proper way is to check loss of water by shading or syringing the foliage.

TRANSPLANTING

Plants raised from seeds and cuttings seldom begin and end in the same spot, and some are shifted several times during their lives, and it is important to be able to do this without serious check.

Moving from pots to permanent quarters is the most frequent and easiest form of transplanting.

PROPAGATION

Water the pots and allow them to dry off partially, as the soil must not be too sticky to slip out, or so dry that it crumbles away. Prepare the ground also by watering. The ideal condition is when the plant's ball of soil is of the same moisture as the ground. Dig the hole first, making it a little larger all round than necessary. Slip the plant out of its pot, which it should leave easily, pick out the drainage crocks that may be caught up in the lower roots, and set the ball upright in the hole. Press the soil round and leave it the same level as it was before, and give a good watering.

Plants moved from the ground are rather more difficult, as it is impossible to avoid injuring roots. Prepare the plant and its new quarters by watering, and take up with as much soil as can be spared. A good plan is to use two trowels, one at each side for small subjects, when a compact ball of soil can be taken and dropped into the new hole. This gives a minimum of exposure and shock. Level the soil and water.

Evergreen shrubs and trees require previous preparation by being cut back two days before moving. Deciduous shrubs and trees are moved when they are out of leaf, and this precaution is unnecessary. Dig a trench round the bush, and when undermining slip sacking round the ball to prevent the soil dropping away from the roots. The sacking is secured all round, and the bush carried in it to the new position, which should be ready. If the removal of the sacking is likely to expose roots it can be left in the hole, where it will soon rot. Special care must be taken to set the shrub or tree *exactly* at its old level. With so many roots broken stakes will be needed until new roots have gained secure hold on the ground.

Shade and syringing are recommended for some days.

Transplanting from pots can be done safely at

GARDENING FOR THE SUB-TROPICS

any time, but where injury is inevitable every plant has its least susceptible period. This is when the plant is at rest, but just about to begin growth. However, if a change of position is imperative—unexpected clashing of colours may occur in the flower-beds—one need not feel bound to the orthodox seasons. Very special care should be given, and the chances are the move will prosper. Undoubtedly some people are far better than others at transplanting, and seem to be able to succeed at any time with apparently no particular trouble. The faculty is known as “gardener’s hands.”

CHAPTER III

HINTS ON MANURE

A GOOD soil is composed of a judicious mixture of sand, chalk, clay, and humus. Sand and clay are almost useless for the nourishment of plants: they only serve to give them physical support. Chalk (lime) besides being of direct value as plant food is essential for the preparation of other materials in the soil absorption by the roots. Humus represents the dead and decaying residue of former plant life or previous dressings of organic manures. It imparts a dark colour to the soil, and contains most of the necessary plant foods. The necessary plant foods, besides water and air, are potash, phosphates, nitrates, lime, sulphates, magnesia, and iron.

Now almost every soil under cultivation is abundantly supplied with sulphates, magnesia, and iron, and, in some cases, lime, so that we may say that a soil is fertile when there is an adequate supply of potash, phosphates, and nitrates in a form in which the roots can assimilate them as required.

Perhaps the best method for determining the actual needs of the soil is that of experimenting with growing plants which have been treated with these substances alone and combined.

Manure, originally *man-œuvre*, merely meant annual cultivation of the soil, then the term got narrowed down to the application of dressings such

GARDENING FOR THE SUB-TROPICS

as lime and dung (organic manures). The term fertiliser is usually applied to artificial and chemical plant foods (inorganic manure) as distinguished from ordinary dung.

THE TILLING OF THE SOIL is in itself an invaluable means of providing plant food, and the first and most important method of increasing the fertility of the soil. The more the surface of the soil is stirred and turned the more thoroughly it is granulated and aerated.

LIMING is the next consideration in good gardening practice. Without lime no organic manure can feed the plant, no potash or ammonia can be fixed, no phosphates effectively applied. Any soil containing less than one part of lime to two hundred of soil cannot be brought to a satisfactory state of fertility. The soil can be tested by taking a dozen small samples from different parts of the ground, mixing them together, and placing a small part of the mixture in a tumbler, and then pouring in a wineglass full of muriatic acid. If the liquid fizzes and bubbles freely the soil may be taken to contain a sufficiency of lime; but if it only bubbles feebly or not at all it is safe to conclude that a liberal dressing of lime is absolutely necessary. Lime may be applied in the form of slaked lime as fine powder at the rate of one hundred to two hundred grammes per square metre (when the land is free from a crop in active growth, as it is liable to injure the rootlets). When needed, lime produces remarkable results: the clubbing of cabbages and turnips and the ravages of many insect pests are at once reduced and checked.

DUNGING.—The maintenance of organic matter in the soil should be the basis of garden manuring: practically all soils except pure vegetable moulds are benefited by the application of occasional dressings of dung or by the digging in of green crops.

HINTS ON MANURE

The plant food contained in dung is relatively small, so the advantages of dunging are rather secondary than direct. A light soil is assisted to retain moisture and withstand drought. A mulching of manure of lawn mowings placed on the surface of the soil in dry weather checks evaporation, and encourages the formation of surface-feeding roots. A heavy soil is rendered lighter and more porous. The potash, phosphates, and ammonia contained in the soil are liberated for absorption by the plant.

In storing animal manure, the liquid product should be carefully collected, as it adds greatly to the value of manure. Manure should be kept in a sheltered place, as free exposure to the air reduces manurial value. Fresh stable manure, especially if there be much straw in its composition, is distinctly injurious because it wastes the nitrates of the soil. Unless the straw has fairly rotted the manure should not be applied. Horse manure is richer than cow manure, but more liable to loss on keeping. Pig manure is intermediate in strength between that of horse and cow. Poultry manure, when allowed to dry in the air, is about four times, and pigeon manure about eight times as strong as stable manure. Owing to their highly fermentative nature both poultry and pigeon manure should be used with caution. The following table shows the average quantity in kilos of potash, phosphates, and nitrate contained in a ton of animal dung, and also what is considered safe quantities in kilos to be applied per square metre respectively per annum:

	Potash kilo	Phosphate kilo	Nitrate kilo	Dressing per a sq.m. kilo
Stable manure, } Horse, Cow, Pig	5	2	5	5
Poultry manure .	4	8	9	4
Pigeon manure .	11	20	9	0.5

FERTILISERS or concentrated plant foods should only be applied after carefully considering their

GARDENING FOR THE SUB-TROPICS

individual properties and the object in view. In cultivating a cabbage, for instance, thick, fleshy but tender leaves of good flavour are required, whereas in the case of a tomato an abundant supply of fruit of good quality and early maturity is the end in view. In practice the growth of a plant depends, as far as plant food is concerned, on the minimum amount of the three main plant foods, viz., potash, phosphate, and nitrate, which the plant is capable of containing. If one of the three be lacking no excess of the other two will make good the deficiency.

POTASH INCREASES QUALITY, that is the production of sugar, flavour and scents. Garden soil in full cultivation rarely lacks potash. Unlike nitrate it suffers no loss through drainage. Heavily dunged soil contains great reserves of the material: the point is to liberate it and render it soluble, and the addition of lime is quite sufficient for this purpose. Potash is needed in particular by starch and sugar producing crops. Where the soil is poor and sandy or exhausted from lack of regular application of manure, potash becomes at once a necessity. A soil deficient in lime should be attended to before the application of potash, because soil can retain the potash only if there is a sufficiency of lime. Potash in the form of Kainit should be applied in winter when the roots are at rest, and at the rate of about 25.50 grammes per square metre. If it is desired to apply potash during the growing season it is preferable to use sulphate of potash (purified Kainit), and to apply it at a quarter or half the above rate.

PHOSPHATE STIMULATES FRUITFULNESS AND EARLY RIPENING.—Ordinary garden dung is deficient in phosphates: if any artificial manure be bought it should be phosphate. And if we wish to obtain a quick return for our expenditure the purchase of a soluble phosphate, superphosphate, is far more

HINTS ON MANURE

likely to satisfy our expectations. A good sample of superphosphate should be dry and powdery, and readily crumbled in the hand: sticky samples should be avoided. Superphosphate can be applied almost at any season as a top dressing at the rate of eighty to a hundred grammes per square metre. It is apt to burn the leaves, and care is necessary in applying it to the flower border.

PHOSPHATE OF POTASH is very expensive but a most powerful fertiliser. It is ready for plant nourishment without any further modification. Excellent results will follow its use in the form of liquid manure for greenhouses and window gardening if dissolved in water at the rate of three grammes per litre.

NITRATE PROMOTES GROWTH: darkens the leaves, and makes them larger and more vigorous. So powerful is this influence that the profitable character of a fruit-bearing plant may be destroyed, and all its energies diverted to the production of coarse rank shoots and leaves by too liberal an application of nitrate. It must therefore be used with great caution, and its successful use depends upon the provision of an adequate supply of potash and phosphate. Nitrate is obtained in commerce as nitrate of soda, sulphate of ammonia, and nitrate of potash.

Nitrate of soda absorbs moisture and should be stored in a perfectly dry shed; if of good quality it should not be salty or pungent, but mild in taste and decidedly cooling to the palate. It is ready for immediate absorption by the plant, but it is not retained by the soil: it should therefore be applied in successive small doses if needed in considerable amount. For stimulating the growth of a young crop a surface dressing of ten grammes per square metre is sufficient, whereas for plants grown for leaf or stem production, such as cabbages or asparagus, it can profitably be applied at the

GARDENING FOR THE SUB-TROPICS

rate of forty to fifty grammes per square metre in successive small doses, each of which should not exceed ten grammes per square metre at intervals of ten to ninety days. A dose of five to ten grammes per square metre will be found of assistance to fruit trees at the critical time of setting fruit. Nitrate of soda must not be mixed with superphosphate (acid phosphate). The gardener will be well advised to apply nitrate of soda as a separate dressing, only when a crop is in active growth. It is injurious to foliage, and care must be taken not to dust the leaves.

SULPHATE OF AMMONIA is a more desirable product for general use. The effect of both salts as far as the plant is concerned is practically the same, but while the nitrate has to be applied in small doses to save loss, the sulphate can be applied in one dressing in spring, and, unlike the former, it will be retained in the soil and gradually liberated as nitrate. It is very caustic to foliage. It is essential that there should be a sufficiency of lime in the soil, otherwise the ammonia is not retained. Sulphate of ammonia can be mixed with superphosphates and applied at one dressing, but not with lime. The product should be guaranteed free from sulpho-cyanide, not to contain more than two per cent of free acid. To test the former dissolve thirty grammes of the salt in water and add a few drops of chloride of iron. If a blood-red colour appears the sample is unfit for garden use.

NITRATE OF POTASH is expensive, but invaluable for use in the greenhouse in the form of liquid manure if dissolved in water at the rate of three grammes per litre.

An IDEAL LIQUID MANURE suitable for all plants can be obtained by dissolving three grammes of nitrate of potash per litre of water.

E. de C.

CHAPTER IV.

FERTILISERS

1. **ANIMAL MANURE.**—Cow manure or gamouse dung is most suitable for warm, sandy soils, and probably best for the majority of plants. Horse manure is far more heating, as is also poultry droppings. Cow manure should be used to induce vigorous growth, but stable, pigeon manure, and poudrette should be applied when plants are well established and flower production is required.

2. **LIQUID MANURE.**—This is a good way to apply animal fertiliser, as it is fairly free from seeds of weeds which constitute the chief drawback to the solid form. To prepare it take a water-tight barrel and put a spigot in the side near the bottom. Place four inches of clean straw in the barrel, letting it come well up above the spigot, then fill half full of manure. Fill the barrel with water. Fit a tight cover over it, and soon it will be ready for use. As long as the liquid runs the colour of coffee the manure will not need renewing, and more water may be added from time to time, but when it shows signs of exhaustion empty the barrel and fill as before. It is wise to dilute the first drawings from the barrel. Gamouse dung may be substituted for horse manure. If poultry droppings are employed it should be made much weaker. In using liquid manure it should only be applied when the soil has been watered the day before, never when it is dry.

GARDENING FOR THE SUB-TROPICS

3. **COAL-ASHES.**—As they contain a certain amount of phosphates, which tend to sweeten the soil, they are also beneficial in increasing the strength and stiffness of the stalks, and are especially valuable for Asters, Dahlias, and Delphiniums. Do not mix them with manure, but strew on the surface of the soil.

4. **LIME.**—Apply when the ground is empty, or in the case of established plants like roses, when the roots are resting. Slake the lime for several consecutive days, then spread it on the surface of the soil, digging it in very lightly. Use three-quarters of a pound to a square metre.

5. **POUDRETTE.**—An excellent fertiliser obtainable from the Cairo Manure Company. Apply sparingly as it is very strong. A teaspoonful to one pot is sufficient. Especially recommended for Chrysanthemums, Cinerarias, Roses, and Violets after the appearance of the buds.

6. **SOAP-SUDS.**—These furnish another excellent fertiliser. Every drop from the bathroom and kitchen should be saved and applied round the roots of the plants, especially Roses, Dahlias, and creepers. Soapy water should not be put on the foliage of plants, as it leaves a scum which is difficult to remove.

7. **SOOT.**—This adds to the richness in colour of flowers and leaves, and is especially good for Pansies and Roses. Apply dry, mixed with the surface soil.

CHEMICAL FERTILISERS—SPECIAL DRESSINGS

8. **ANNUALS.**—Apply as top dressing a month before flowering :

Superphosphate	80-100 grs. per sq. m.
Sulphate of ammonia	...30-50 grs. per sq. m.

FERTILISERS

9. CARNATIONS.—Apply as top dressing in February :

Superphosphate 100 grs. per sq. m.
Sulphate of ammonia 50 grs. per sq. m.

10. CHRYSANTHEMUMS.—Apply as liquid manure in October or previously :

Superphosphate 6 parts
Sulphate of ammonia 2 do.
Sulphate of potash 1 do.

dissolved in water at the rate of three to four grammes per litre. Apply after watering.

11. POT PLANTS.—Apply as liquid manure after watering and before or on appearance of buds :

Nitrate of potash 1 part
Phosphate of potash 1 do.

dissolved in water at the rate of ten grammes per litre.

12. ROSES.—Apply end of February and September a dressing of

Sulphate of ammonia 25-30 grs. per sq. m.
Superphosphate 80 grs. per sq. m.

13. If a special stimulant is required during the flowering season supply as liquid manure :

Nitrate of potash 1 part
Phosphate of potash 1 do.

Apply after watering.

CHAPTER V

PESTS

INSECT PESTS

IN order to make effective attacks on insect pests one should know something of their habits and structure. An important difference between animals and insects is that the latter do not breathe by means of mouth and lungs, but take air direct into air passages through pores which are grouped over their bodies. This make them very susceptible to suffocation. Remedies against insect pests will be found to include many devices for smothering, others are intended to kill by poisoning the food, and these two methods cover the potency of *all* insecticides. Besides these we have direct action and trapping.

Suffocation is mostly done by dry powders, which need to be blown on with bellows. Soft bodied creatures, such as caterpillars, perish quickly under these attacks. Sometimes a poison is incorporated in the powder, as in Keatings. Water alone will suffocate red spider, and soap solutions, which leave a film after the water has dried away, will kill aphids, also known as green-fly. Petroleum is often added to increase the efficacy of soap solutions, and can be used by itself to kill hard-shelled beetles, etc., whose breathing pores are protected from dust.

PESTS

The commonest poisons used are tobacco and quassia. Compounds of arsenic copper and lead are also put into many of the powerful orchard washes, but they are poisonous to human as well as insect life, and better out of the garden. Soft soap is often added so as to catch the pest both ways. Always use a fine spray to distribute the wash well, and follow a few hours later with clean water. This is especially important where soap or petroleum has been used in the mixture.

Direct action means finger and thumb work, which, though disagreeable, is final, or brush and methylated spirit, or boiling water.

Trapping can be done by providing attractive food or shelter, after which comes boiling water or petroleum.

Whatever form of attack is chosen, one effort is not enough. The onslaught should be made every day until the plant is clean, or the survivors will quickly renew the population. And remember that insects and fungi always prefer the plant of flimsy texture and sappy growth, that is to say, the plant not in robust health.

ANTS.—Pour boiling water on their nests, except where near plant life, then apply soapy water. A saucer of sweet oil is irresistible bait for them. It attracts and destroys them at the same time.

RED ANTS.—Half a cocoanut is an excellent bait, also meat bones, to which a string should be attached for convenience of dipping into boiling water.

BETTER (Rose).—Protect blooms by enclosing in bags made for the purpose, or in the early morning hand pick the beetles, dropping them into petroleum.

CATERPILLARS.—Dust infected plants with Keating's powder. Hand pick as well.

GARDENING FOR THE SUB-TROPICS

MOLE CRICKET.—Pour cheap vegetable oil into the gallery when the soil is moist. The cricket will emerge and die at once.

BLACK FLY.—Spray with tobacco water: either of the following recipes are good.

1. Boil one and a half pounds of tobacco in one gallon of water. Strain and dilute to the colour of strong tea. Add soap at the rate of half a pound to every three gallons of mixture.
2. Infuse three pounds of tobacco powder, or half a pound of tobacco leaf in water for about six hours. Strain off, press the tobacco, and infuse again. Add half a pound of soft soap dissolved in water, and make up to ten gallons.

GREEN-FLY.—Plenty of thumb and finger work is beneficial. Spray with tobacco water on two consecutive days, or use petroleum emulsion as recommended in Calendar for May.

ROSE SCALE AND MEALY BUG.—Apply the following with a brush: leave for twenty-four hours and wash off:

One big teacupful of soft soap, two big teacupfuls of warm water; beat to a lather. Add a liqueur glass of petroleum; beat the whole thoroughly; boil the mixture till it bubbles; let cool, and boil up once again.

Another method is to remove with a stiff brush dipped in equal parts of methylated spirit and water.

RED SPIDER.—Spray after sundown with formalin at the rate of four grammes formalin to one litre of water.

SPIDERS.—Syringe with water.

PESTS

FUNGOID DISEASES

Diseases caused by the minute parasitic plants of the fungoid type are very difficult to deal with, as until the plague has reached an advanced stage it is invisible, though the plant may appear sickly. A condition of general health is the best prevention. Water encourages fungi. Sulphur and copper are deterrents.

MILDEW.—Wrong methods of cultivation are often the cause of mildew being so virulent. Roses grown in a draughty position are highly susceptible to attack, and a wet badly drained soil also tends to encourage the disease. Injudicious manuring or watering is also bad, and every care must be exercised to see that the best cultural methods possible are practised. They say that in France those parts of the country which have no hedges are free from the disease, while those parts where hedges abound the mildew appears. Plants in an open situation suffer less than those where the circulation of air is restricted. It must be remembered that spraying does not cure the disease, but merely prevents its spreading: it is therefore important to begin early and continue systematically spraying the plants if possible once a week or at least once a fortnight.

Mr Horace McFarland, in the "American Rose Annual" of 1919, gives the following suggestions for the treatment and control of mildew, by using a more convenient method, namely, by dusting. The efficiency of sulphur fungicide for the control of rose mildew has long been recognised. Lime-sulphur and other liquid sprays are more or less effective, but owing to the time and labour involved in applying spray solutions, and to the unsightliness brought about by their use, an efficient dust mixture is preferable. Stewart in 1916 reports good control of rose mildew

GARDENING FOR THE SUB-TROPICS

by the use of dust mixture consisting of ninety parts finely ground sulphur and ten parts arsenate of lead, referred to as sulphur-arsenate. A similar mixture was used by McFarland in 1917, and found to be decidedly more efficient than lime-sulphur solution or Bordeaux mixture. Careful experiments seem to warrant the opinion that the sulphur-arsenate dust mixture, properly applied, affords the most efficient control for the disease most disturbing on garden roses.

Dr Keatinge says: To fight this pest satisfactorily the plants should be sprayed every week from early September till June. The spray I have found to be most successful is composed of

Formol	4 grammes
Clear water	1 litre.

Formol is a forty per cent solution of formic aldehyde, and can be purchased in litre bottles from drug stores. Plants should be sprayed once a week either before or after the sun is on them, but if the leaves are badly affected the wash may be applied twice a week to begin with.

RECIPES

Keep plants free from spiders by syringing with water. Dust with flowers of sulphur in the early morning. Water plants sparingly. This applies chiefly to roses. A mixture of ninety parts finely ground sulphur with ten parts of powdered arsenate of lead, dusted on plants with bellows or distributor is also highly recommended.

Rust.—Remove all infected leaves. Spray the new foliage with a solution of sulphide of potassium, eight to ten grammes to one litre of water. Add for adhesive purposes the white of an egg to every two litres of the mixture.

PESTS

WHITE SPOT (violets).—Spray with Bordeaux mixture, or with Burgundy, which is equally efficacious and far easier to prepare.

BURGUNDY MIXTURE.—Four pounds copper sulphate, five pounds washing soda, forty gallons of water, half to one ounce soap to every gallon of water.

This mixture must be used at once as it has no keeping quality.

CHAPTER VI

A SELECTION OF PLANTS

ONE of the difficulties that beset a beginner is to find out what plants can be grown, or are worth growing. The following lists are made out entirely from the writer's personal tastes, so that well-known and possibly admired subjects have *been omitted*, and many things that are only good in July and August have not been included. Moreover, there must be scores of plant families, to say nothing of varieties, that are only waiting for introduction to prove valuable.

ANNUALS

This section includes many plants which under other conditions would be biennials or even perennials. But in hot climates they come quickly to maturity, flower and die within the year, or if they do not die deteriorate so that it is better to treat them as annuals. They have been arranged under their colours as likely to simplify selection.

BLUE

Ageratum is delicate in colour and most useful in the border. The dwarf varieties are best for edging and bedding. Blue Star and Imperial Dwarf blue can be recommended. The *Ageratums* seed freely, and become a pest in some instances.

ANAGALLIS GRANDIFLORA is one of the very best blues. It is a large form of the common

A SELECTION OF PLANTS

pimpernel, and should be planted in a sunny position, as it closes directly the light fades. When ordering seed specify the blue variety, as there is a brick-red one.

ANCHUSA CAPENSIS has forget-me-not flowers and grey-green foliage. It is specially recommended for the length of its flowering period.

CINERARIAS make a magnificent show in the early spring, either grown in pots or in borders. They require very careful attention in watering. There are splendid blues to be had in the small flowered sections, cactus and stellata.

CONVOLVULUS.—See *Ipomœa*.

DELPHINIUMS are great favourites. The variety "Blue Butterfly" is the most effective, having rich blue flowers and finely cut leaves. "Belladonna" pale blue and "Formosum" rich gentian blue with loosely made flower spikes are both perennial by nature, but must be treated as annuals because they do not withstand the heat of summer.

IPOMŒAS, commonly called "Convolvulus" or "Morning Glories," are most useful creepers, quickly covering unsightly objects and giving shade and shelter. The variety "Heavenly Blue" is a really delicious colour.

LOBELIAS are deservedly popular. The spreading varieties are suitable for carpeting and edging. The rich blue shades flower later than the pale blues. *L. tenuior* is a very tall sort, of fragile habit, with large pale blue flowers.

MYOSOTIS (forget-me-not), does well in a shady, moist situation. *M. dissitiflora* bears large flowers of the typical forget-me-not blue. *M. alpestris* "Royal Blue" is very richly coloured.

NEMOPHILA INSIGNIS is a cup-shaped flower of pure forget-me-not blue. It is best sown direct

GARDENING FOR THE SUB-TROPICS

into the ground. *N. maculata* has rich purple blotches.

NIGELLA DAMASCENA is known as love-in-the-mist. The variety "Miss Jekyll" is the best blue.

PANSIES must be treated as annuals. There are fine blues in the Trimardean strain. Fairy Queen, a porcelain blue with white edge, and Lord Beaconsfield, a rich plum blue, are two of the finest.

PHACELIA CAMPANULARIA is a splendid gentian blue. It should be sown in October in situ.

SCABIOSA CAUCASICA grows about two feet, and bears large pale blue flowers of the "cushion" type. It does not flower until late in the spring.

CRIMSON, SCARLET, PINK

ALONSOA WARSCEWICZII is an effective adjunct to the garden. Bright scarlet.

ANTIRRHINUMS come in great variety of colours, including white and yellow, but the red shades are the most useful. If pink is required the short kinds are better than the tall. Short forms run from eighteen inches to two feet, and tall forms two to three feet, and nurserymen keep the two separate.

CANDYTUFTS give brilliant colour for masses. The individual flowers are not very interesting. Also in white and lilac.

CLARKIAS are very free growing and good for picking, the long spikes arranging well in vases. "Salmon Queen" is a particularly pretty kind.

A SELECTION OF PLANTS

DIANTHUS are great favourites. "Indian pink" is a common name for them. The *Heddewigii* strain is the most effective, having petals finely slashed at the edges, and the colours are rich and striking.

GODETIIAS are a numerous tribe of profuse bloomers. "Sunset," "Crimson Glow," and "Schamini" (double pink) are all good.

HOLLYHOCKS will behave as annuals if sown in pots and allowed to get thoroughly pot-bound before being planted out. Separate colours can be selected from any catalogue.

LARKSPURS are annual delphiniums and very showy. Blue is the commonest colour, but the variety "Rosy Scarlet" is by far the most desirable. It requires very rich soil and is worth every attention.

PHLOX DRUMMONDII are indispensable adjuncts to a Cairo garden. They come in great variety of colours, bloom early, and have a long flowering season. The salmon pink one introduced by Mrs Marsham is a general favourite.

SAPONARIA CALABRICA is a pretty little pink flower, useful for rock work.

STOCKS are quite the most satisfactory plants of all. They come into flower in February and continue to bloom for weeks. Acclimatised seed gives the best results. They should be sown in thumb pots, and planted out in drills, as they resent flooding. Also mauve and white.

VERBENAS are popular, and make first-class bedders. "Miss Willmott" is a fine salmon pink.

GARDENING FOR THE SUB-TROPICS

YELLOW AND ORANGE

CALLIOPSIS (*Coreopsis*) are universal favourites, easy of cultivation, and useful for cutting, as they have very long wiry stems, and are almost perpetually in flower.

CANARY CREEPER.—A favourite climber for trellises. It is very graceful, and grows as high as ten feet.

COSMEA is another daisy-like flower with finely cut foliage. "Klondyke" is a magnificent orange variety of tall habit. There are also pink varieties.

DIMORPHOTHECA AURANTIACA is a daisy of glossy orange with a central black zone. Extremely floriferous.

ESCHSCHOLTZIAS are a great acquisition to any garden, coming in a range of magnificent colours. "Mandarin" and "Mikado" are particularly fine. They close at noon.

NEMESIA STRUMOSA SUTTONI is the finest strain with the most brilliant shades of orange and red. A dwarf blue kind, "Blue Gem," is more dainty than effective. They are easy to grow, and make good pot plants.

WHITE

ALYSSUM MARITIMUM is a most useful plant for edgings. It will sow itself and produce a second crop. "Little Dorritt" is a compact variety.

GAURA LINDHEIMERI is included here, as it does better treated as an annual. It has graceful sprays useful for decoration. *G. coccinea* is a rose-coloured variety and worth a trial.

A SELECTION OF PLANTS

GYPSOPHILA ELEGANS should be grown for cutting purposes to mix with other flowers. Sow it straight into the ground.

NICOTIANA AFFINIS (tobacco) is very showy and sweet. It requires half shade.

White forms can be had of the following, which have already been mentioned under their most characteristic or valuable colour: *Antirrhinum*, *Candytuft*, *Dianthus*, *Godetia*, *Hollyhock*, *Larkspur*, *Phlox Drummondii*, *Stock*, *Verbena*, *Cosmea*, *Godetia*, *Clarkia*.

MISCELLANEOUS ANNUALS,

whose colours have a wide range, or which are valuable for other qualities.

ARCTOTIS GRANDIS is a daisy-like flower, white with a lilac back and a deep lavender disc. The foliage is grey. Its long stems make it useful for cutting, but it is prone to close.

MIGNONETTE is indispensable. The sweet scented rather than the giant varieties should be chosen, as the scent is never very strong in Egypt. If large flowers are desired, "Giant Machet" is the best.

NASTURTIUMS are in every colour except blue. Dwarf varieties are more useful than the climbing ones. "Empress of India," with blue-green leaves and scarlet flowers, is very striking, and the "Lilliput" strain, which carries its flowers well above the foliage, is a distinct improvement on the old dwarf type.

NIGHT-SCENTED STOCK (*Mathiola bicornis*) is of indefinite colouring, but should have a place near the house, as its fragrance in the evenings is delicious.

GARDENING FOR THE SUB-TROPICS

PETUNIA.—This is a large family. The “grandiflora” strain, with its garish shades of purple and magenta, has many admirers. The “nana” type includes several soft shades of pink, among which “Rosy Morn” can be recommended, being dwarf and very floriferous.

PORTULACA in both double and single varieties is valuable for summer bedding when there is little colour in the flower borders. The flowers are cup-shaped, fleshy in texture, and in brilliant shades from orange to crimson. Dwarf.

PRIMULA MALACOIDES has a dainty light lilac head of flowers, and should be grown for its charm and long flowering season. It is delightful for cutting.

SALPICLOSSIS make fine pot plants, though also good for the open border. Their flowers are coloured rich soft purples, browns and gold.

SWEET PEAS.—Now that the early flowering varieties have been introduced, sweet peas constitute one of our most popular winter annuals. The old varieties cannot be recommended, as they are spoilt by the hot winds which come just as they are about to bloom. The Telemy varieties are fragrant and in good colours, but are not so handsome as the new early flowering “Spencers” with their waved standards. The ground should be well dug and prepared in drills, and the seed sown about three-quarters of an inch deep, and about three inches apart. Early staking is necessary. Moisture is essential, and sweet peas should be grown where they can receive all they need without adversely affecting other plants. Spraying in the evenings in hot weather is beneficial, and frequent applications of manure water must be given. To secure large flowers allow only one

A SELECTION OF PLANTS

central stem to develop, and nip out all side shoots.

ZINNIAs are another useful summer annual. The range of colouring is similar to that covered by nasturtiums and portulaca. Both dwarf and tall varieties are obtainable.

PERENNIALS

The true perennial belongs to a temperate climate, where after a season of growth and bloom it can rest under favourable circumstances. Such conditions are impossible in hot countries. Consequently, this list must look strange to anyone accustomed to the English herbaceous border. Our perennials are more of the shrubby and sub-shrubby type, forming a certain amount of real wood and able to withstand drought.

ADIANTUM (Maidenhair fern) is invaluable for decoration. A pretty way of growing it is on porous water vessels which are kept filled with water and so sustain the fern. *A. cuneatum* is the most ordinary variety, and many could be quite as easily grown. They all require moisture, though not stagnant, and will not bear much sun. Division.

AGATHEA CÆLESTIS is a charming little plant, having small blue daisy-like flowers with yellow centre. Cuttings.

AGROSTEMMA CÆLI-ROSEA is desirable chiefly for its handsome soft grey foliage. The upright flower is inconspicuous. Seed.

ANCHUSA ITALICA, "Dropmore variety" (dark blue), and "Opal" are familiar to all English gardens where they are among the handsomest of

GARDENING FOR THE SUB-TROPICS

border plants. They never attain the same growth here, and are inclined not to bloom at all after the first year. Pot binding, root pruning, and constantly raising new stock is the only way to obviate this. Root-cuttings, seed.

ASPIDISTRAS are a great standby. They are green and so hardy that nothing can kill them. There is also a popular variegated kind. Division.

CARNATIONS can always be relied on, particularly the Luxor strain. Full cultural directions are given in the Calendar of Operations.

CHRYSANTHEMUMS are the glory of the garden in autumn, and native gardeners delight to compete with each other in attaining size and variety. For cultivation, see article, page 120.

DAHLIAS are magnificent in these days, and their beautiful formation and gorgeous colourings make them almost indispensable if one summers here. Otherwise they are hardly worth space, time, and labour on the chance of finding a few blooms left on one's return in October or November. Seed.

GERANIUMS (Zonal pelargoniums) are useful for permanent bedding, and thrive until really hot weather sets in, when they need shading. The ivy-leaved varieties are charming for window-boxes, vases, etc. See article, page 120.

GERBERA JAMESONI and its hybrids are met everywhere now. They are graceful daisy-like flowers in wonderful shades of orange and pink, and most effective for decoration. Seed.

HELIOTROPE is worth growing for its scent alone. There are many dwarf varieties, "Lord Roberts" with deep violet flowers and dark foliage being one

A SELECTION OF PLANTS

of the best. The taller growing sorts can by careful training be made to cover walls. "President Garfield" is good for this purpose. All need good soil. Cuttings.

LAVENDULA ARBOTANOIDES, a native of the Canary Islands, is most suitable for the rockery, being of a compact nature. The mauve flowers produced on slender spikes are most effective and floriferous. Cuttings.

MARGUERITE (*Chrysanthemum frutescens*).—Variety "Mrs Sanders" has double white flowers and blooms constantly. It requires protection from the summer heat and should be lifted, potted, and kept in the shade. Cuttings.

MESEMBRYANTHEMUMS are a very large family, three hundred varieties being known. The flowers are daisy-shaped, pink, red, yellow, and white, and open only in direct sunshine. The foliage is very fleshy. For edgings and on rock work they are invaluable. Those already introduced are so successful that probably they would all thrive, and anyone who would collect and specialise on them would be doing a real service. Division and Cuttings.

NIPETA MUSSINI (Catmint) is common in English gardens where it is a favourite edging, having grey-green foliage and profuse lavender blue flowers. Here it dies down in winter and blooms in the summer, and is suitable only as an ordinary border plant.

PENTSTEMONS have brilliant flowers somewhat like a foxglove, in shades of red and mauve, mostly with white throats. They bloom early. The "grandiflora" strain is a general favourite. The

GARDENING FOR THE SUB-TROPICS

variety "Murrayana" is a unique species, having amber and scarlet tubes of large size. Cuttings.

SALVIA FARINACEA is a most attractive plant, having long mauve flower spikes of velvety texture, and mauve stems. The foliage is grey. Altogether ornamental and desirable. Cuttings.

SOLANUMS are numerous, the commonest being *S. Seaforthiana*. This has clusters of small blue flowers, followed by red berries. Climbing varieties will be found described in that section. Seed.

STATICE has only lately found its way into our gardens, and is so satisfactory it has doubtless come to stay. *S. latifolia* is a deep lavender blue, and flowers profusely, lasting for a very long time. *S. arborescens* is a tall grower, with blue flowers. Seed.

VERBENA VENOSA has a head of tiny mauve flowers and feathery foliage. It is used to great advantage on rock work, and as an edging, where it gives almost the same beautiful effect as *Nepeta Mussini*, which we cannot grow so successfully here. Division.

VIOLETS are largely grown. A proper resting period is essential, and this is more easily contrived by pot cultivation than the open border where they are likely to receive a flooding, despite all directions to the contrary. The single varieties are easier to manage than the double. "La France" and "Princess of Wales" are the two most popular varieties, and some of the newer ones should be tried. Cultivation is dealt with in the Calendar. Layers.

A SELECTION OF PLANTS

PLANTS WITH BULBS AND TUBERS

An article on special points of cultivation will be found on page 113.

AGAPANTHUS UMBELLATUS is attractive alike in flower and foliage. The flowers are blue, borne in large clusters, and coming in the spring. The plants must be given a great deal of water during the summer and some protection from heat. Division.

AMARYLLIS are bulbous plants which come in a large variety of colours (shades of red), and are very showy in the early spring.

ANEMONES are familiar to most gardeners and great favourites. They can easily be raised from seed, but under the conditions in Egypt they do not flower satisfactorily the second year, and fresh tubers have to be imported. The "St Brigid" strain is the finest.

BEGONIA LUMINOSA AND *B. GRACILIS* need to be lifted and potted in the summer and transferred to shady quarters or they will succumb to the heat. They are a delicious bright rose colour and excellent for bedding.

CALLA ÆTHIOPICA (*Richardia* or *Arum lily*) is found in most gardens, but it is too beautiful ever to be thought common. It needs half shade and liberal feeding. There is a particularly beautiful variety with an open flat spathe, *C. devoniensis*.

CANNA (Indian shot) are extremely ornamental plants with fine leaves and showy flowers in strong shades of orange and reds. They are an acquisition for the summer garden. They require rich soil and plenty of moisture.

GARDENING FOR THE SUB-TROPICS

FREESIAS are general favourites, and can be had now in delicious shades of pale mauve and pinks, besides the original cream.

GINGER (*Zingiber officinale*) furnishes the well-known spice. The white lily-like flowers are very fragrant. It requires abundant moisture. Division.

GLADIOLI are handsome, bulbous plants well worth growing, although they do not flower until May, which is too late for some gardens. The late Colonel Fitzgerald grew them very successfully.

GLOXINIAS are seldom grown owing to their difficult management, particularly as regards watering. They need a good deal of water and yet are impatient of wet foliage. Moist atmosphere is what they like, and this of course is very difficult to contrive. They must be grown indoors, in a southern aspect close to a window where they will obtain plenty of sun.

HYACINTHS are troublesome in the same way as tulips, and the remedy is the same. The Italian and Roman varieties bear the climate better than the Dutch, but are not nearly so strong.

IRIS.—This is an enormous family, and not grown to any extent in Cairo. Kamel Bey Haggad has a small garden in Shoubra where he cultivates more varieties than most people. The beautiful Kämpferi section flowers in May, and requires plenty of moisture. *I. ochroleuca*, *I. Monspur*, *I. fulva* and *I. germanica asiatica* are all good. *I. stylosa* is the earliest to flower, a soft lavender blue and dwarf.

LILIUM LONGIFLORUM is a handsome, tall-growing species, bearing pure white, fragrant flowers. It

A SELECTION OF PLANTS

is easy to cultivate, and can be left in the ground if watered sparingly during the summer.

NARCISSI (Daffodils and jonquils) are easy to grow, particularly the single kinds: the double go off after their first year. A bulb catalogue gives hundreds of kinds, and all are beautiful. The cheap sorts are inexpensive because they are robust. High prices mean either novelties or weak constitutions.

NERINES are Cape bulbs of great beauty, carrying clusters of brightly coloured flowers on stiff stems from September till January. *N. sarniensis* *corusca* major is brilliant scarlet; *N. Fothergilli* major also has scarlet flowers, smaller, and blooming before the leaves grow. The new hybrids have a wide range of colour. They should be grown entirely in pots and dried off during spring and early summer, and started gently by giving water once a month. When in full growth, occasional waterings with liquid manure are beneficial.

OXALIS FLORIBUNDA has leaves like shamrock and handsome rose-coloured flowers. It spreads rapidly, and can be increased by seeds and cuttings.

RANUNCULUS thrive in Egypt, growing wild in parts of the western desert. Tubers can be obtained and successfully naturalised in the garden. If European kinds are desired, the cockade and turban varieties are recommended, having immense double flowers in a brilliant range of colours.

TULIPS are difficult to grow successfully, owing to a tendency of the flowers to open before the stalk has been properly developed. This can be

GARDENING FOR THE SUB-TROPICS

prevented by shading with cones of paper placed over each bulb, when the flower stem will pull up towards the tiny hole at the top. The covering must be removed when the stem is long enough. The naturally tall May flowering tulips succeed better than the early dwarf varieties.

WATSONIA ALBA bears spikes of flowers very similar to a gladiolus, blooming in April. The variety commonly grown is "W. O'Brien" (white), but there are others, both red and pink.

CHAPTER VII

ORNAMENTAL SHRUBS

ABUTILION is an easy growing shrub with pendent flowers. *A. Thompsoni* is yellow, and *A. Thompsoni* variety *floreplena* is the same but double. *A. venosum* is orange. Probably other varieties would do equally well. Cuttings.

ACALYPHAS are grown for their large reddish leaves. They are effective for groups. Cuttings.

ARALIA PAPYRIFERA with its large palmate leaves borne on erect stems, and its panicles of pure white flowers in February make it quite one of the handsomest shrubs we have. Suckers afford the easiest means of propagation, but seed is possible.

ARUNDINARIA JAPONICA grows ten feet high. It is very like a bamboo. Division.

BAMBUSA.—Bamboos can be had both tall and dwarf. The best known are *B. vulgaris* and *B. vulgaris* variety *aurea variegata*, which has variegated leaves and yellow stems. They are useful for water sides. Division. Allied families are *Arundinaria* and *phyllostachys*.

BUDDLEIA AMERICANA is a strong grower and useful for screens. The leaves are grey and downy,

GARDENING FOR THE SUB-TROPICS

and the flowers are long orange spikes. *B. Lindleyana* is a purplish red species. *B. variabilis* and its varieties *magnifica* and *Veitchiana* are difficult to grow, but worth trying for the sake of their mauve flowers which come in spikes nearly a foot long. Cuttings.

CACTUS.—This term includes the genera:—*Cereus* (rat-tailed cactus), *Echinocactus* (hedgehog cactus), *Mammillaria*, *Opuntia* (prickly pear), and *Phyllocactus*. They have showy flowers, and quaint succulent stems without foliage, set with thorns. They will stand intense heat and sun, and only ask to be kept dry during the resting period to flower well. Probably a great many more varieties could be grown than are already in our own gardens. The *Opuntias* grow tall, and a group always attracts attention. The other genera named are suitable for rock work. Cuttings.

CÆSALPINIA GILLIESII will grow into a small tree if not kept trimmed. It has acacia-like foliage and handsome orange flowers with red anthers in summer. Seed.

CALLISTEMON.—These are handsome evergreen shrubs with flowers mostly characterised by beautiful scarlet stamens. *C. speciosus* is particularly showy. *C. salignus* is lemon coloured. Cuttings.

CASSIA EROMOPHYLLA is an altogether desirable shrub with its masses of yellow bloom in February, and delicate linear leaves. Seed.

CESTRUM.—Four species of this ornamental shrub are common here. *C. elegans* has red flowers; *C. fasciculatum* has mauve flowers; *C. aurantiacum* bright yellow. All are profuse bloomers and worth growing. Cuttings.

ORNAMENTAL SHRUBS

CLERODENDRON FALLAX has a bright scarlet flower in clusters and large cordate leaves. It has only recently been introduced. Cuttings.

CUPHEA EMINENS is low growing; the flowers are orange and yellow. Good recent introductions in this family are *C. miniata*, *C. platycentra*, *C. ignea*, *C. Llavea*.

CYTISUS ALBUS is the ordinary small flowered white broom.

DÆDALACANTHUS NERVOSUS, often wrongly called *justicia*, has brilliant blue borage-like flowers, and coarse, heavily ribbed foliage. Cuttings.

DATURA has noble foliage and large, drooping, bell-like flowers. All species are poisonous, and should never be planted in places that children frequent. *D. fastuosum* has double yellow flowers. *D. ceratocaula* is white, deeply tinged with purple. *D. arborea* is pure white. Seed.

DENDROCALAMUS GIGANTEA is a giant reed or bamboo, growing one hundred feet high. Division.

ECHIU.—A coarse grower with heavy leaves, and too untidy in growth to be really valuable in a garden. *E. fastuosum* has deep blue flower spikes, easy to grow, and the best. Cuttings.

EUPHORBIA.—This is a numerous family, but only a few are cultivated to any extent here. The *Poinsettia* grows into a tall shrub with sparse foliage and handsome red flower bracts. Its new shoots should be cut back after flowering, leaving four buds. Low growing shrubs should be planted in front of *Poinsettias* to hide the long bare stems. *E. quercifolia* is more dwarf than the

GARDENING FOR THE SUB-TROPICS

above. The leaves are like those of an oak with a patch of scarlet or pink at the base. This seeds freely and becomes a pest in the garden unless carefully watched. *E. jacquiniæflora* has a thick dark stem, small leaves and powerful thorns, from which it gets its popular name of "Christ's Crown." The flowers are a brilliant coral red set all along the stem. Cuttings.

GENISTA HISPANICA bears clusters of yellow pea-shaped flowers in April. Cuttings, Seed.

GYNERIUM ARGENTEUM (Pampas Grass).—This giant grass with its silvery plumes makes a beautiful specimen standing alone on a lawn, particularly near water as it likes moisture. Division, Seed.

HIBISCUS.—There are many beautiful species in this family, but they ought not to be grown in gardens as they are host plants for mealy bug, from which it may attack the cotton crops. Cuttings, Seed.

JASMINE ARABIS has very fragrant white flowers. Natives sell the flowers strung on thin sticks. Cuttings.

LANTANA DELICATISSIMA is a gem, bearing heads of mauve flowers all the year round. Very useful for rocks gardens and edgings. Layers. *L. Camara* has red and orange flowers, *L. mutabilis* yellow and pink, *L. nivea* white. These are taller growing and suitable for shrubberies. Other tall and effective lantanas are *L. multiflora*, "ver luisant" and "globe d'or."

LINUM FLAVUM is particularly attractive with its pure yellow flowers. It is low growing and blooms during the winter. Rootlets.

ORNAMENTAL SHRUBS

MELALEUCA ERICIFOLIA is a graceful, fine-foliaged evergreen shrub, with narrow spikes of white flowers, not unlike pipe cleaners. Cuttings.

MELIANTHUS MAJOR (honey flower) is one of the most striking plants we have. The grey-green pinnate foliage is beautiful, and the dark red flower spikes curious and decorative. These should be removed before they seed or the plant dies down and takes some time to recover. Seed.

NANDINA DOMESTICA is unique with elegant foliage which turns red as it dies off. The insignificant white flowers are followed by clusters of large red berries. Seed.

OLEANDERS (*Nerium*) form important features in most gardens. The flowers are both double and single, the latter varieties being of tidier and more upright appearance. Colours are varied, mostly in pink shades. They should have old and diseased wood cut away, and be watched for caterpillars which often prey on them. Cuttings.

PHLOMIS FRUTICOSA (Jerusalem sage) is a low compact growth, greyish leaves, and whorls of tawny orange flowers during the summer to late autumn. Cuttings.

PHYLLANTHUS include some of the most attractive shrubs for grouping. *P. pallidifolius* has variegated leaves and pink flowers. *P. nivosus* has ovate leaves mottled with white. *P. nivosus* variety *atropurpureus* is most commonly grown.

PHYLLOSTACHYS is similar to a bamboo. *P. nigra* grows ten feet high, and *P. mitis* grows fifteen feet. Division.

GARDENING FOR THE SUB-TROPICS

PLUMBAGO CAPENSIS and **P. MICRANTHA** are described under climbers, but they can also be treated as shrubs. Layers.

RICINUS (castor-oil plant) is a very handsome quick growing shrub, and so easily propagated by seed that it sometimes becomes a pest in the garden. **R. Gibsonii** is the most brilliant in its scarlet foliage and flower. Seed.

RUSSELIA JUNCEA has long feathery sprays covered with coral red flowers which last a long time. It is one of the most decorative plants grown, but needs support as its growth is frail and tall. Division.

SANTOLINA INCANA is a grey-leaved dwarf shrub, associating well with pink and mauve flowers and useful for edging. Cuttings.

SENECIO CINERARIÆFOLIA has downy green leaves beautifully cut, and panicles of yellow flowers in March. Suckers and Cuttings.

SPARTIUM JUNCEUM (Spanish broom) is tall and yellow flowered in April, and very decorative. Seeds.

SPIRÆA.—These form slender sprays of white flower in early spring, and are most valuable for decoration.

TECOMA CAPENSIS.—Described among climbers can also be treated as a shrub. Cuttings.

THEVETIA NERIIFOLIA has pointed glossy green leaves and fine trumpet-shaped yellow flowers all the summer. It is evergreen and inclined to scale disease.

ORNAMENTAL SHRUBS

TITHONIA DIVERSIFOLIA grows tall and straggly with large leaves and yellow daisy-like flowers. Its height and habit can be improved by cutting back after flowering. Cuttings.

VINCA (periwinkle).—These are trailing ever-green shrubs. *V. major* has large blue flowers, and there is also a white form. *V. minor* is altogether on a smaller scale, and can be had in blue, white, pink and semi-double. They are all good for the front of shrubberies. Division.

WIGANDIA URENS (stinging) grows very tall. It has enormous hairy leaves and small violet blue flowers of which bees are fond. The star-shaped flowers fall profusely and carpet the ground, producing a pretty effect. The size of the leaves makes them susceptible to wind, and the torn and broken foliage is often a disfigurement. Suckers.

YUCCA.—These fine liliaceous shrubs make good specimen plants for lawns and terraces. All the year their strong leaves growing in huge rosettes are ornamental, and in early summer they produce huge trusses of creamy white flowers. The two best known are *Y. filamentosa*, whose leaf cluster is practically stemless, and *Y. gloriosa* which throws up several sets of leaves on short reddish stems. There are several sub-varieties of these two which would be worth introducing. Division.

MEDIUM SIZED TREES

BAUHINIA (camel foot) are fine trees with beautiful azalea-like flowers in pink, mauve, and white varieties blooming in the spring. The popular name "camel foot" alludes to the shape of the leaf. The tree has two drawbacks: it is untidy in the shedding of its leaves, and recently has become a prey to mealy bug. Seed.

GARDENING FOR THE SUB-TROPICS

BUTEA FRONDOSA is strikingly beautiful when blooming, but some trees fail to do so, for what reason is not certain. Hard pruning or any form of check appears to promote flowering, and also exposure to full sun. The flowers are a brilliant orange, and the leaves trifoliate. In partial shade it is evergreen and does not produce flowers. Seed.

CITHIAREXYLUM QUADRANGULARE (fiddle wood) has beautiful green foliage which turns a lovely red in winter before dropping its leaves in April. White flowers. A moderately fast grower. Cuttings.

CYPRESS LAWSONIANA is one of the few conifers that flourish. It is deep green in colour, grows quickly, and its regular outline forms an agreeable contrast to other trees. Owing to its dense evergreen habit it makes a good wind-screen. Seed.

ERYTHRINA CRISTA-GALLI has racemes of dark red flowers and is evergreen. *E. corallodendron* has long racemes of deep scarlet which come after the leaves have fallen. Cuttings.

JACARANDEA MIMOSÆFOLIA is quite one of the most beautiful trees we have. Its fern-like foliage falls when the delicate sky-blue flowers appear in May. Fine avenues of this may be seen at Maadi. Cuttings.

PARKINSONIA is small and graceful, having light green spiny foliage and yellow flowers in April. Seed.

TECOMA STANS has bright yellow flowers which are produced twice a year if judiciously pruned. (See Calendar). Cuttings.

ORNAMENTAL SHRUBS

FINE TREES, SUITABLE FOR LAWN AND SPECIMENS

FICUS (rubber trees).—*F. elastica* has large clean shining leaves. It grows moderately fast, and its spreading growth gives good shade. Cuttings. Anyone interested in rubber trees should apply to the head of the horticultural section of the Agricultural Department who would give particulars of the numerous varieties.

POINCIANA REGIS (Gold Mohur) has flaming red flowers which appear in most cases before the fern-like foliage in May and June. Trees vary as to the length of time they are deciduous, some remaining bare for weeks. It has a pleasing light trunk. There are fine specimens in the avenue leading to the Anglo-American hospital at Ghezireh, Cairo. Cuttings.

SALIX BABYLONICA (weeping willow) is seen at its best as a single specimen on grass. The foliage is a vivid green, and though deciduous in winter the fine drooping branches give it a distinctive character. Cuttings.

SCHINUS MOLLE (weeping pepper) is the tree par excellence for the lawn. The foliage is a beautiful soft grey-green with the habit of a weeping willow, and the additional advantage of being evergreen. It bears a crop of red berries. Seed.

LARGE TREES, SUITABLE FOR EXTENSIVE GARDENS, RECREATION GROUNDS AND AVENUES

ACACIA NILOTICA is a native tree of Egypt and figures in every landscape. Its scraggy outline is familiar to all. With care it grows to a large size and develops a fine crown. In spring it bears yellow flowers. Seed, Cuttings.

GARDENING FOR THE SUB-TROPICS

CASSIA FISTULAR has finely cut foliage and golden flowers similar to a laburnum. Seed.

CASUARINAS (she oak) are fine tall conifers, and make excellent wind-screens on the outskirts of a garden. Seed, Cuttings.

ERYTHRINA INDICA is tall and handsome, bearing orange blossoms in April. It attracts mealy bug and is deciduous. Cuttings.

EUCALYPTUS includes a large tribe, all more or less ornamental. They are greedy feeders and impoverish the soil, but on the other hand their foliage is valuable for house decoration. About thirty varieties are grown. Seed.

LEBBEK (*Albizzia lebbek*).—This is the most popular shade tree for wide streets. It grows quickly and is deciduous for only a short time in spring. Seed.

KIGELIA PINNATA (Sausage trees) has interesting foliage, and the flowers are followed by ornamental pods. It grows tall. Seed.

STERCULIA DIVERSIFOLIA are valuable as screens. They are tall, well-shaped evergreen trees with short branches, like poplars in appearance, and moderately quick growers. Cuttings.

TERMINALIS ARJUNA is a graceful tree with luxuriant, drooping foliage practically evergreen. Seed.

ORNAMENTAL SHRUBS

PERENNIAL CLIMBERS

Those marked (P.) are most suitable for covering pergolas.

ALLAMANDA HENDERSONI.—This has large chrome-yellow flowers, rather transient, but abundantly produced. Growth is somewhat straggling, which can be improved by hard pruning. This is one of the plants that has only recently been grown in Egypt, and probably other species of *Allamanda* would be equally successful. Layers.

(P.) **ANTIGONON** (coral creeper) is one of the most attractive climbers we have. *A. leptopus* is the common variety. More desirable are *A. amabile*, with deep rose-coloured flowers, and *A. insignis*, pink. Deciduous, Seed.

ARTOCARPUS INCISA (bread fruit) is of straggly growth with fine long leaves deeply incised, in the axils of which are produced large globular heads of extraordinary fruit. It requires shade, and is thus useful for training up the trunks of trees. Cuttings and Suckers.

ASPARAGUS PLUMOSA and *A. SPRENGERI* are grown for their ornamental foliage, which is valuable for cutting. Evergreen and easy of cultivation. Seed and Division.

(P.) **BEAUMONTIA** is quite one of the finest climbers we have. Its clusters of pure white trumpet flowers, nestling among its rich green foliage, are a gorgeous spectacle. It is a rapid grower, but does not flower until its fourth year. Great care must be taken when pruning not to let any of the milky sap get into one's eye, as it is

GARDENING FOR THE SUB-TROPICS

deadly poison and causes blindness. Easily propagated by suckers.

BIGNONIAS are a numerous tribe. The clusters of bright orange trumpet flowers of *B. venusta* are unsurpassed in colour, and masses of it hang gracefully from many buildings. *B. jasminoides* has white flowers with crimson throats, while *B. unguis* is a profuse grower, having tendrils that quickly bind its foliage over anything, and bright yellow flowers in March. *B. floribunda* is purplish, and there are many others which are still on trial for cultivation in Egypt. Layers.

(P.) **BOUGAINVILLEAS** flourish and form one of the most beautiful adjuncts to the garden. *B. glabra* and *B. spectabilis* are seen everywhere. *B. glabra* variety *Sanderiana* with pale mauve flowers blooms nearly all the year round. *B. spectabilis*, the handsomest of all, has panicles of deep purple flowers from January to April. There is "Maud Chettelburg," also a rich purple, and "Cypheri," paler in colour. Cuttings. There are handsome red varieties including brick-red in *B. spectabilis* variety *lateritia*, cerise in variety *Warcewiczii*, claret in variety *Aurantiaca*, and rosy carmine in *Braziliensis*. Ringing and Inarching. A full article on Bougainvilleas appears on page 117.

CLEMATIS FLAMMULA has small white flowers, producing a feathery effect similar to "Old Man's Beard." It grows quickly, but the foliage is thin in winter. Seed.

CLERODENDRON SCANDENS is an evergreen climber, having rich dark foliage and tiny white flowers. It is useful for interior hedges if supported and covering trellis. A quick grower. Cuttings. *C. splendens* is very fine with panicles of scarlet flowers, and oval wavy leaves. Of rather recent introduction, *C. Thomsonæ* is a delightful creeper, flowering late spring and

ORNAMENTAL SHRUBS

summer. It has large panicles of bright crimson flowers with pure white calyces. The leaves are oval and dark green. Cuttings.

CLITORIA TERNATEA is a profuse bloomer with small blue flowers. It has a pronounced tap-root, and the seed should be sown in deep pots to allow room for this. Good for trellis. Seed.

HOYA CARNOSA has fleshy leaves and clusters of stiff waxen flowers in early summer. Other varieties are also grown. All like partial shade. Cuttings and Layers.

IPOMŒA (convolvulus) has perennial as well as annual species. *I. Cairicea* or *Sitt-el-hussen* is a rampant grower, and should only be planted where it is necessary to provide shade quickly. Its flowers are blue and last all the summer. Layers. *I. tuberosa* has yellow flowers. Seed.

JASMINES are numerous and all evergreen. *J. grandiflorum* bears its white sweet-scented flowers in the autumn.

J. AZORICUM is a luxuriant grower, flowering profusely in summer, the flowers being small and very sweet.

J. SIMPLICIFOLIUM has large clusters of white flowers. There are several yellow kinds. Cuttings.

KENNEDYA (Hardenbergia) is an attractive pea-flowered climber. It requires little room, being low in growth, and is difficult to cultivate owing to its being impatient of much water.

K. COMPTONIANA and **K. MONOPHYLLA** are desirable species with purple flowers. Cuttings and Seed.

GARDENING FOR THE SUB-TROPICS

(P.) **LONICERAS** (honeysuckles) might probably be better represented. At present only two are common : *Lonicera japonica*, which is very sweet-scented and blooms in spring and autumn, and *L. sempervirens*, which is more striking in its orange-red flowers, but is unscented. Cuttings and Layers.

MAGNOLIAS are seldom seen here, though general favourites in England. The late McMurdo Pasha successfully cultivated a fine specimen. *M. grandiflora* is well adapted for planting as a climber on a house where there is plenty of space. It has large glossy evergreen leaves and massive white flowers, which open in summer. This to many people is a serious drawback. *M. conspicua* (Yulan) also has white flowers, borne on the bare stems in spring. *M. Soulangeana*, a hybrid of the latter, has similar habit, but its flowers are stained pink. Layers, Grafting.

MAURANDYA BARCLAYANA is a dainty climber with small bell-like flowers in purple and lavender shades. It does quite well as a trailer from window-boxes and vases. Seed.

PASSIFLORA (passion flower).—All these are at home in hot countries. *P. cœrulea* is a rapid grower with blue flowers. Suckers. *P. edulis* has white flowers, tinged purple, followed by edible fruit. Seed.

(P.) **P. QUADRANGULARIS** is the handsomest. It has square stems with very large leaves and beautiful flowers, violet, red, and white, which are borne in the winter. By artificially fertilising fruit can be obtained. Cuttings.

PLUMBAGO CAPENSIS is justly a great favourite with its masses of light blue flowers. *P. micrantha*, with small white flowers, is not often grown, and

ORNAMENTAL SHRUBS

unfortunately the beautiful *P. rosea* and *P. coccinea* have not proved suitable to the climate. Layers.

(P.) *RHYNOCHOSPERMUM JASMINODES* is very similar to jasmine, except that the white petals have reflexed margins. The foliage is so glossy that dust has little effect on it, and the colour is a good green. Cuttings.

SMILAX (*Medeola*) is a graceful twining plant which should be provided with strings while growing. The foliage is small and glossy, and most useful for table decoration. The inconspicuous flowers are scented. It should be dried off in summer. Division.

(P.) *SOLANUM WENDLANDII* has handsome flowers of a pale mauve shade in early summer. *S. jasminoides* has bunches of delicate pure white flowers, very pretty, but not entirely happy in so hot a climate. Both are deciduous. Cuttings.

STEPHANOTIS is quite the most delicious creeper in Alexandria, where it revels in the moist air. In a dry climate it rather battles with existence and flowers less freely. *S. floribunda* is a popular variety. Cuttings.

TECOMA RADICANS is very similar to *Bignonia*. It has clusters of large terra-cotta trumpet flowers during May and June. *T. capensis* has orange scarlet flowers, and blooms nearly the whole year round. *T. Brycei* has pinkish trumpets with fern-like foliage, and is very graceful. Evergreen. Layers.

THUNBERGIAS are a very large family and useful for many purposes. The small flowered kinds are excellent for covering old tree stumps, rocks, etc. Of these *T. Gibsoni* is a magnificent orange, *T. Baheriis* pure white. *T. alata* and *T. alba* are

GARDENING FOR THE SUB-TROPICS

buff and white with black eyes. *T. grandiflora* is on a much larger scale altogether. The leaf is heart-shaped. *T. lauriflora* has a pointed leaf and is a rampant grower. Both of these have large solid flowers of the lovely lavender blue that one associates with *Vanda cœrulea*. The flowers of *T. mysorensis* are red and yellow, and it is not so hardy or beautiful as the blue varieties. Seed, Layers.

TRADESCANTIA ALBA MAJOR and *T. VIOLACEA* are useful ground creepers for covering rock work, etc. The first is most commonly grown. The leaves are bright green and the flowers more pretty than conspicuous, and the plant spreads rapidly. Cuttings.

VINCA MAJOR (periwinkle), can be successfully grown, and is useful (as in England) for shady positions. Cuttings.

WISTARIA CHINENSIS blooms profusely in March. The white variety also does well. Grafts and Layers.

EXTERIOR HEDGES

CLERODENDRON SCANDENS has fine dark glossy foliage and a tiny white flower. It grows rapidly and needs support. Evergreen. Cuttings and Layers.

DURANTA PLUMIERI has bright green foliage to which the dust does not cling, a valuable quality for exterior planting. The flower is a pretty blue and the fruit orange, which makes it ornamental grown as a shrub. It is a quick, strong grower, and needs a good deal of clipping to keep it in order. Cuttings.

ORNAMENTAL SHRUBS

ROSA BRACTEATA (wild rose) makes an impregnable hedge when fully grown. Its flowers are large and white, and the foliage glossy and evergreen. It grows quickly and needs support when young. Cuttings.

SCHINUS TEREBINTHIFOLIUS (red pepper) is an evergreen with shining leaves and with red berries during the winter. It grows quickly even in quite poor soil. Grown freely it makes a decorative shrub, and its berries may be used as a substitute for holly. Cuttings.

INTERIOR HEDGES

LANTANA CAMARA makes a good low hedge, though its growth is not so compact as some others. The flowers vary in colour from white to red. The foliage is deciduous with an unpleasant odour.

MURRAYA EXOTICA has shining pinnate leaves, small white flowers, followed by red berries in spring. It makes an excellent compact low-growing hedge, and its smooth leaves do not collect the dust. Cuttings.

MYRTLE also has shining foliage and forms a dense low hedge. Its flowers are white and fragrant. It is a slow grower, and is unfortunately much subject to scale, and latterly to mealy bug also. Cuttings.

PITTOSPORUM grows very slowly and does well in shade. *P. cornifolium* has whorled glabrous leaves. The foliage of both *P. Tobira* and *P. viridiflorum* is variegated. Cuttings.

ROSEMARY makes a miniature hedge which is quite thick if the plants are set in a double row. The foliage is very aromatic. Cuttings.

SPECIAL ARTICLES

CHAPTER VIII

SPECIAL ARTICLES

ROSE NOTES

JANUARY.—People make a great mistake in not budding their own roses. The process is so simple and the variety of roses now in Egypt being considerable, a collection may be rapidly increased and at no expense, as it is hoped that no member of the society would refuse a bud or two to any grower. Moreover very often a whole year can be gained by budding rather than by importing from abroad, to say nothing of the fact that most roses do better in Egypt when budded on the beledi briar than when grown on the briars used in Europe. What the true name of the beledi briar is I am not prepared to say, but what interests us now is not the name of the variety but the method by which we can prepare the number of stocks we require for next year. First and foremost remember that it is wise to plant three times the number of cuttings you ultimately want as budded roses. Some cuttings will not strike, all the buds will not take, and some of the plants will die when they are moved, and then if you have the best of luck there is nothing nicer than to be able to give a friend a plant of a rose which he wants to have but for which he thinks he will have to wait a long year. Your gardener will assure you that December is much too early to make cuttings and that you must wait till February, but he is quite wrong. Cuttings of the beledi made in February

GARDENING FOR THE SUB-TROPICS

in December will strike at the rate of about ninety-five per cent. If possible choose a bit of ground which is somewhat shaded by the house or other buildings or by trees, but which during the spring and summer will get lots of sun. The reason is that shade may benefit the cuttings, but you will want the budded roses to have all the sun they can get during the summer. Prepare the cuttings by cutting a branch about the circumference of a lead pencil into lengths of from fifteen to twenty centimetres, the bottom cut being just below a bud.

With the point of a knife scrape out all but the top three buds in order that in the future your trees may not throw up suckers, but be sure that you or your man leaves the top three or four buds, for otherwise the cuttings cannot grow and all your labour will be lost. Plant the cuttings firmly, allowing about five centimetres to remain above ground. Give a good soaking of water to begin with and never let the cuttings get dry, but avoid over-watering. The cuttings should be planted in rows thirty centimetres between each cutting so that in August each may be removed with a stout ball of earth. If more than one row is planted there should be fifty centimetres between the rows so that the process of budding may be carried out without breaking the plants in the adjacent row.

With regard to the roses themselves there should still be plenty of flowers in December. Even if some of the hybrid teas are going over the teas should be at their best. Mildew is sure to be bad. Really to fight this pest the plants should be sprayed every week from early September till June, but still something can be done even now, and in any case it will help to prevent an attack in the spring. The spray I have found to be most useful is composed of

Formol	4 grammes.
Clear water	1 litre.

ROSE NOTES

Formal is forty per cent solution of formic aldehyde, and can be bought in litre bottles from any drug store. As a rule plants should be sprayed once a week either before or after the sun is on them, but if the leaves are badly attacked the wash may be applied twice a week to begin with.

FEBRUARY is a very busy month in the rose garden, for during this month the plants must be pruned and manured. No fixed date can be given for the operation of pruning, as so much depends upon the varieties and the weather. However, a little observation is all that is required. Most of the plants have stopped growing and flowering by the middle of the month, and it is a good plan to stop all water at the end of January. Soon the eyes especially at the tops of the shoots will be seen to be swelling, and then it is time to cut.

First clean out all thin and twig-like shoots, and all rugged old useless wood should be cut clean away to the base. Then tackle what remains, but now the difficulty begins. The Egyptian gardeners have got into the way of pruning all roses in the manner in which they prune *La France*, that is cutting down the whole bush to within a few inches of the ground. This method seems to answer very well for *La France*, but it by no means suits all varieties, and as varieties yearly increase in number the difficulty of pruning grows. The National Rose Society has issued a most useful annual on pruning which shows how a great number of varieties should be pruned, and each year in the annual they give details for the newer sorts. But that does not quite simplify matters for us in Egypt, as climatic conditions and consequently the growth of the plants here is not always what it is in England. Indeed it is only by experience that one can learn to prune well, but a few useful hints may be given. In the first place, the object of pruning is to induce new growth and to restrain, within

GARDENING FOR THE SUB-TROPICS

bounds, some of the very free growing varieties. By free growing is meant such roses as Comtesse Festetics Hamilton, Marie Van Houtte, Rubens, Anna Chartron, G. Nabonnand, and others of the teas which if left alone will grow into huge bushes. The term does not refer to climbers, which latter should not be pruned in December but after they have flowered in June, and even then it is enough to clean out the useless twig-like growths and any old dead wood, but otherwise to leave them to themselves. The same may be said about the free growing varieties mentioned above, provided they are planted where they can be allowed to grow, but if they cannot be permitted to take up too much space cut back only to the extent necessary to bring them within bounds. Always cut just above a bud that points outwards, because the middle of the bush should be kept free to allow the entrance of light and air. Bearing this in mind, do not hesitate to remove even good bearing wood if it takes up the whole middle of the bush.

Do not confound the hybrid perpetuals such as Frau Karl Drushki with the free growing teas just mentioned. All, or practically all, the hybrid perpetuals in this country send up great shoots two or three metres long which only flower once a year. It is to be regretted that a number of the newer hybrid teas are showing this tendency; indeed it seems hard to say if some of them are not really hybrid perpetuals. For practical purposes, as far as rose growers in Egypt are concerned, they are hybrid perpetuals, and we cannot but view with dismay this tendency to turn out roses which only bloom once a year in this country. Among this class may be mentioned the following: His Majesty, W. G. Lippiat, Mrs Cornwallis West, George Dickson, and King George Fifth.

However, we may by correct pruning, before its annual blooming, get a mass of flowers from each

ROSE NOTES

plant, instead of only a few, if it is left to itself. Cut the great strong shoots back to about twenty to thirty centimetres from the ground, if they are new growths from the base. If they are new wood springing from the old wood of last year, leave two or three eyes of new wood and cut above an outward pointing bud. The weak growth and any dead or worn-out wood must be all removed.

We now come to the ordinary teas and hybrid teas. It is here that experience tells, but it may be taken as a good rule that the more the growth the less the pruning. Do not cut away fine new ripe wood to make it level with infirm growth, but cut it back to a good plump outside eye, and try and cut the whole plant in such a manner that when the new growth is complete the plant will have a more or less round form, open in the middle. But alas that is not possible in some cases. All the careful pruning in the world will not make old plants of some varieties (for instance the Lyon rose or either of the Cochet's) grow into nice bushes, and the best plan with them is to bud new plants every two years and to throw away the gaunt old scarecrows. Indeed one would hear much less about roses degenerating in Egypt if people would take the trouble to renew their plants instead of expecting old and worn-out rose trees to furnish first-class flowers. If the advice given in January to plant briar cuttings in December has been followed, the prospect of ordering new plants need not dismay the grower who feels that he has already spent more than he ought on his garden, and he may look forward to pleasant employment at the time when the flowers do not afford much satisfaction.

In conclusion a word about the instruments for pruning. In Europe it was formerly held that one must prune with a knife. To do so in Egypt is practically an impossibility, and a year or so ago somebody dared to question the old article of faith

But be careful to see that the cutting edges are sharp. Early in the article it was suggested that the roses should be kept without water. This should continue till the beginning of March, after which date the ground should be well flooded. In the meantime plenty of manure should have been applied and hoed into the surface, but not dug in deeply. Good rotten cow or horse manure will do, preferably the former, but experience points to the poudrette of the Manure Company of Egypt as the best manure for roses. It may be applied at the rate of one ordinary garden basket to each square metre and a half. To prevent nuisance about an inch of soil should be removed, and after the poudrette has been spread over the surface the soil removed should be returned on top of the manure.

In March roses will require the regular routine of watering, hoeing, and spraying. The question is often asked, how often should roses be watered? Needless to say it is impossible to reply, as so much depends on the weather and the nature of the soil. It may, however, be taken as a general rule that roses are watered more often than is necessary. But in stating this it must be remembered that these notes refer to the cultivation of roses growing in beds by themselves. The mixture of roses with annuals or other plants may be extremely pretty, but in that case the roses must take their chance along with the rest of the inhabitants of the border, and all special culture becomes impossible. Given, however, that the roses are by themselves they should, when they require it, be thoroughly flooded in from one to three days' time (according to the weather and the soil), the surface of the ground will be in a fit state to be well

ROSE NOTES

but not deeply hoed with a Dutch hoe or with a small and light fas. Provided the earth is in the right condition, the surface will be broken up into clods, and these should on the same or following day be powdered up, and the whole bed should be nicely raked over. Very soon, even in an hour or so should the weather be hot, the surface of the bed will look as if it required water again, but that such is not the case may be proved by removing a little of the powder from the surface, when the soil underneath will be found quite wet, and it will remain moist much longer than if it had not been hoed. In the latter case cracks appear on or about the second day which allow of wholesale evaporation: whereas if the surface is covered with powdered earth the moisture is retained so that the next watering may be delayed until the soil under the surface begins to get dry. So use your fingers and your eyes instead of your eyes alone when determining how soon you should again flood the beds.

But the hoeing is not only of service in preventing, it also gives the minute organisms in the soil the chance they are waiting for. Their rôle in life is to convert manure and insoluble compounds into soluble plantfood, and to do so they must have plenty of air. Thus by keeping the roots warm, by preventing evaporation, and by offering suitable food near the surface, the hoeing conduces to an abundant formation of the surface roots, and plenty of these means plenty of flowers, while their absence means a lack of roses. The cut back bushes should be growing freely all the month, and provided there is enough good growth will fill up the middle of the plant. There will also be a lot of thin weak growth which only takes up sap and will produce small flowers at the expense of those on the strong shoots. All these twiggy shoots should be removed. The plant should then have a smaller or larger number (according to the

GARDENING FOR THE SUB-TROPICS

variety) of nice strong shoots, at the end of which will appear in most cases a bunch of flower buds. Why people will not disbud their roses is one of those mysteries that cannot be solved. They complain that they do all that they are told to do and that their plants are splendid but their roses are small, but they will not disbud because they think they are robbing themselves of roses. It is no good telling them that the five or six buds will not open at the same time, and that if they want to cut the flowers they will have to remove the buds unopened. Would it not have been better to remove them before and to have been able to cut and, if not to cut to admire on the bush, one large and beautiful rose rather than have to be contented with a small bloom surrounded by green buds. The central bud should be left and those around it removed, but some experience and a little common sense is required. It often happens that at the top of a very strong red shoot there is a coarse looking more or less deformed bud. Do not cherish this monstrosity, but remove it and allow two or three of the central buds on these great strong shoots which will appear on side shoots to develop in its place. But do not remove all central buds on these great strong shoots, remember that you were told to remove a coarse looking more or less deformed bud. In some varieties such as Caroline Testout and La France, in which the flower is apt to ball, the shape may often be improved by leaving a second bud as well as the large central one. And finally spray every week, but not when the sun is hot. The best time is quite late in the evening or early in the morning before the dew is dry. You cannot be sure to avoid mildew, but if you will use the wash mentioned in the January notes from the time the first leaves appear, you will certainly not be so grievously afflicted as you would have been had you neglected the washing.

In APRIL the rose grower should be reaping

ROSE NOTES

the reward of his labours, but life will not be all a joy. Mildew, green-fly and rose beetles will be a constant worry. The first of these pests has already been referred to in these notes, and the wash used for it is deadly for green-fly : although roses that are perfectly healthy and well fed should not be seriously affected by aphids. The rose beetle is dealt with elsewhere. Do not be afraid to cut your blooms, the more you cut the more flowers you will have, but always cut to an out-looking bud so that the new growth may not fill up the centre of the plant. Towards the end of the month the briar cuttings put in either in December or January should be ready for budding. A description of the process of budding will be found on page 41, but it is far better to see it done a few times than to learn from a book, and many of the native gardeners understand the actual process of budding and perform it very well. They are in the habit, however, of making one or two serious mistakes. First they nearly always bud roses too high on the briar; the bud should be inserted as low down as possible. Next they are very fond of cutting off the briar above the bud too soon. It is a mistake to try to force the bud into growth in this manner, and even after briar is growing it does no harm to leave a good deal of the briar growth until such time as the plants have been moved, or if they are growing where they are intended to remain until the autumn pruning comes round. Lastly if the buds are low down on the briar, do not flood the ground until ten days after the budding has taken place. Water the plants freely before the budding, and if the weather is hot, give them a sight of the watering-can every evening, but do not flood so that the water gets in between the bud and the wood. Lastly a word of advice learned by experience. Some people recommend budding without removing the wood from the bud. It is said that in America this plan

GARDENING FOR THE SUB-TROPICS

is frequently followed. It was tried last year with excellent results as far as the percentage of takes were concerned, but the growth afterwards was certainly disappointing, so learn to remove the wood cleanly and not to leave a little hole at the base of the bud which means that it can never grow.

In MAY there is little to be done in the rose garden, for with the coming of the dry, hot days the blooms rapidly become thinner and smaller, and the rosarian must content himself with thoughts of the past and hopes of the future, rather than present joys. But in spite of the heat Mme. Jules Gravereux should still be producing her glorious blooms. Everybody should grow this wonderful climber. She blooms in the autumn and early winter and again in March till June, and the buff-pink flowers are superb indeed, her only fault is that she is rather prone to mildew. If therefore you are the happy possessor of a plant be careful to spray it freely even though it means the use of a step-ladder to get at the top branches. If the variety is not to be found in your garden bud one or two briars with it without delay, for budding should be finished this month. The stocks which have not taken may be budded again, and those which have taken should be gone over carefully, and all suckers from below the bud should be removed. But do not be in a hurry to remove the growth above the bud. In cases where the bud is growing freely the briar growth may be removed by small degrees, but to cut away everything but the growth from the bud as the native gardeners are so fond of doing is a mistake. Especially is it a mistake when the stocks have been budded where they are to remain, for the more the growth the more the roots, and next autumn all the roots will be wanted to force along the budded growth after the briar has been entirely removed. The object of budding is to obtain the advantage of

ROSE NOTES

the free root growth of the briar for the benefit of the cultivated variety which is budded upon the wild stock. Few cultivated varieties make free root growth, and therefore it is better and much quicker to propagate roses by budding rather than by cuttings. When the briar growth is cut away next September the full power of the roots will be expended on forcing the budded growth to fill the space occupied by the briar growth, and by the middle of November the maiden plants should produce their maiden blooms, which in many cases are the finest they will ever produce. This term "maiden" gives rise to frequent questions. One is asked what the catalogues mean by "best as maidens" or "best on maiden stock." The explanation is that, especially in less favoured climes than this, there are some varieties which rarely, if ever, reach show form except when flowering for the first time on established briar stock. In contradistinction to a maiden the plant that has already flowered and has been pruned is a "cutback."

H. P. K.

A BELEDI ROSE GARDEN

I should have hesitated to write about a beledi rose garden, but Mrs Stout has insisted on it and there the matter has ended.

Very many of the evils in old gardens come from small ants. These industrious brutes multiply till they become a menace to everything. They carry green-fly from plant to plant, the rose scale from climbing and other roses to neighbouring plants, and the mealy bug from plant to plant. They are cowherds, and live on the milk of the creatures they rear. Their destruction is essential. Go to the ant, thou gardener, and defeat her ways with boiling water and petroleum.

Rose scale also travels slowly along the branches of the rose bushes without the aid of ants. It is the principal source of decay in roses. The roses which take scale readily like the Prince de Bulgarie (scaly at home and abroad), Jules Grolez, and others can also have the scale readily brushed off with a good hard nail-brush, but it must be stiff. This brushing off of scale may often be done, but a very good time for doing it is the month of August, just when the dampness in the air and at the roots of the roses is increasing and with it the scale.

The beledi rose garden is irrigated every twenty days from the 1st May to the end of August. This irrigation results in the plants being full of branches, young shoots, and green leaves. All buds are removed and not allowed to become

A BELEDI ROSE GARDEN

flowers. Once a month the gardener goes round and pulls off the yellow leaves and any leaves with red rust on them. These last are a serious pest when they come. All this entails work, but there is a pleasure in gardening pains which only gardeners know.

Between the 15th of August and the end of the month all the weak scaly branches are cut down from the roots. No branches are left except young healthy ones if there are four or five of them. In their absence the more vigorous scaly ones are left. No branch has its head cut off: for, in the hot months of the year, the life of the branch is in its head. Useless, superfluous, and sickly side branches are cut off. The scale is then brushed off and the scaly parts of all the branches painted with soap and petroleum emulsion. A big teacupful of soft soap and two big teacupfuls of warm water are well beaten up into a good lather. Then the stuff is boiled until it bubbles up, when it is taken off allowed to calm itself, and then made to bubble again. It is now finished, and allowed to cool, when it is ready to be put on with a brush (a big paint brush this time).

Once the branches are painted, they stand for twenty-four hours, when the stuff is hosed off and the bed watered. The plants now appear clean and happy.

On the 1st October the garden is manured with old manure, while a treble portion is given to Maman Cochets, which when well manured are splendid winter roses. A good watering is given after the manuring, and the roses are left to themselves. In two weeks the garden is full of roses which go on as long as they can: the Maman Cochets (like their sons the French Poilus) give out last of all.

When mildew appears as the nights become cold, water the roses only in the mornings. There is no remedy for mildew like taking the leaves one

GARDENING FOR THE SUB-TROPICS

by one between the fingers and persuading the stuff off. This sounds tedious and monotonous, but it is really effective and Egyptian gardeners like doing it. Their ancestors built pyramid after pyramid and enjoyed it.

In the first week of February the roses are not only thinned, but pruned and brought to shape. Every leaf with its diseases on it is pulled off and the garden stripped naked. Scale is brushed off, and every part of every branch well painted with soap and petroleum emulsion. The gardener really enjoys this, and so do the roses. The work is not colossal after a good pruning and thinning. The stuff is again washed off after twenty-four hours and the garden well watered. Healthy, vigorous plants will repay you for all your labour and for the manure you have given. At this time of the year, with the summer before one, cow manure is as good if not better than stable manure.

WILLIAM WILLCOCKS.

A FEW NOTES ON BULBS

Bulbs and bulbous plants are very numerous in Egypt, indeed they form a very important part in the native flora of the country. Among them lilies of many varieties have to be considered:—viz., the Arum lily (or Lily of the Nile), the *Lilium longiflorum*, *L. candidum*, *L. auratum*, the heavily scented *Pancratium maritimum* (Sea Daffodil): and species such as *Narcissi*, *Gladioli*, *Iris*, *Scilla*, *Muscari*, etc., which can be found frequently growing in their wild condition in the salt marshes of Mariut.

Personal observation points to September as the month par excellence in Egypt, as in most other countries, for the planting and growth of bulbs: though October and even November are cited by both Mrs K. Marsham and Mr Walter Draper as being sufficiently early for the purpose. If one sets out with the high ambition of reproducing many of our old home favourites such as the crocus, snowdrop, tulip, and hyacinth, etc., one is fairly certain to be woefully disappointed; though in connection with hyacinths, Mrs Hooker and other well-known flower-lovers confess to having grown the small Roman hyacinth with considerable success.

Experientia docet, and far better than to attempt the almost impossible is it to devote one's time and energy to those bulbs which have proved themselves sympathetic to the country. Among lilies then may be counted the incomparable Lily of

GARDENING FOR THE SUB-TROPICS

the Valley, the *L. gloriosa superba* (that lovely climbing lily imported from India), the European Narcissi, Freesias, Ixias, etc., and many another which may delight the eye and nose with their beauty and fragrance during the month when our other horticultural favourites are more or less in abeyance.

Bulbs lend themselves specially and gratefully to the decoration of our homes and houses, and when planted in artistic bowls or grown in the common or garden pots of commerce for the furnishing of more pretentious jardinières, can be arranged so as to be a perpetual joy to all beholders.

Cleanly washed gravel, carbonated fibre from the florist, or ordinary soil from the garden are all that is necessary to encourage growth in most varieties of bulbs: and if certain care is exercised during the first few weeks of their development, the most astonishing results may be expected. But they must be kept away from the light till they show signs of having rooted firmly, and though they must be watered judiciously, they must by no means be allowed to become waterlogged in the case of their being grown in gravel, the water only being allowed to cover the gravel or stones.

In the case of using fibre, this should be thoroughly moistened with soft water if possible, and kept moist, though never allowed to become sodden: and if ordinary good garden soil takes the place of fibre, a certain amount of broken crockery covered with a small pad of sphagnum moss or a thin layer of freshly cleaned sand should afford an easy bed for the base of the bulb, round which the earth should be firmly set though by no means allowed to hamper the growth of the rootlets or to force up untowardly the bulb.

As a general rule bulbs are apt to be planted far too near the surface. A good rule to follow in this connection is to place it twice its own

A FEW NOTES ON BULBS

height below the soil level, so that any chance of its being forced upwards as the rootlets gain in strength is obviated. In colder latitudes it is necessary to keep the bulbs in an equable temperature but well away from freezing: but here in Egypt it is only necessary to keep them in the dark for a few weeks till the pale leaf shoots may be safely removed to the rays of the sun, where they will quickly assume their normal green colouring, while the early spring sun is all that is necessary to force the plant into blossom.

We must mention also the successful development of daffodil bulbs in water only, water covering the coarse gravel or broken stones which have been placed in wide shallow jars, terra-cotta pots or ornate porcelain bowls in which curiously enough no drainage hole seems to be necessary.

We have seen the most gorgeous results of careful planting and growth of yellow daffodils in a great oriental bowl in the home of a friend in Helwan, the leaves and stems uprearing their fresh sturdy growth to nearly two feet, and the crown of golden blossoms gracefully hovering over them: a most regal adornment for any room in which it might be placed.

Though they cannot strictly be called bulbous plants, the splendid poppy anenomes, with their gloriously handsome colouring varying from white to scarlet, blues, and mauves, etc., may not be very easy to grow: but they require a goodly amount of sun which the East can give them in profusion, and the more sunny the position the better they like it. But they require a deal of water too, and will do their best to appreciate any position they like by multiplying exceedingly. It is important, however, that they should have a thoroughly well drained bed, and if there is any danger of its being water-logged, the mould should be worked up to a considerable height above the general level of the ground. The roots, which are

GARDENING FOR THE SUB-TROPICS

like nothing so much as dried morsels of ginger, should be planted two or three inches deep; the best time for planting being September. We remember seeing very good specimens of poppy anenomes exhibited in Cairo during last spring, so it is evident that some people can grow them successfully.

We have the word of an experienced amateur and real lover of flowers as to the success she gained with her freesias in persuading them to *flower freely and luxuriantly* at Christmas time if not earlier. The bulbs of her earlier crop were allowed to remain in the ground after flowering in the spring, when they were periodically and consistently watered till the old leaves turned yellow and died off. By this time the bulbs had swelled considerably, and after a short time of only a few weeks of being dried off they were replanted in the old soil and the watering recommenced. Long before the autumn had come round the flowering shoots had reappeared, and the buds promised a goodly and magnificent harvest. The actual flowers increased in size and number.

We do not know if any of our readers have made similar experiments, but this one with freesias is certainly worth noting.

N. G.

BOUGAINVILLEAS

(Nyctaginaceæ, South America)

Although much confusion prevails in species and varieties of bougainvilleas most of the specimens known in cultivation are all varieties of two species that can readily be distinguished:

1. *Bougainvillea Glabra*, CHOISY.
2. *Bougainvillea Spectabilis* WILLD.

B. GLABRA has glossy, ovate, bright green leaves and large, pale, rosy, purple bracts which are distinctly veined. It begins to bloom when *B. spectabilis* is nearly over, and is at its best in early summer: it blooms again in autumn. When planted in the open ground and allowed to have its own way it grows to a bush of three to four metres in height and as much in breadth.

B. GLABRA VAR. *SANDERIANA* has somewhat smaller but more acuminate leaves and smaller but deeper coloured bracts. It flowers nearly all the year round, and is in full bloom from June to December. It forms a more compact bush than *B. glabra*, and does not require so much attention to secure shapely plants.

The variety known in England as *B. GLABRA* VAR. *CYPHERI* is not unlike *B. glabra* var. *Sanderiana*, but in no way superior.

Both *B. glabra* and its variety make distinct and showy subjects for the lawn (trained on umbrellas and otherwise), and afford good cut flower material. Propagation can be effected by cuttings in light soil in the open at the beginning of February.

GARDENING FOR THE SUB-TROPICS

B. SPECTABILIS has dull green leaves nearly twice as large as **B. glabra**, often irregular in shape, much thicker, and hairy, especially on the under side, and deep purple bracts. It flowers in panicles from January to April, and is more showy than **B. glabra**. It is a vigorous grower and scandent in habit, plants of immense size being frequently met with. Unless required for training the plant the long shoots it produces should be cut back at all times to keep it compact and prevent its getting straggly.

B. SPECTABILIS VAR. **SPECIOSA**: VAR. **MAUD CHETTELBURG**: VAR. **GRACILIS** (**REFULGENS**) are probably all forms of the typical species with deep purple bracts: Var. **Speciosa** begins to flower in October, and is still in bloom when Var. **Maud Chettelburg** comes into flower, whereas the bloom of Var. **gracilis** does not appear before the middle or end of January. Like **B. glabra** the above varieties can be grown from cuttings in open ground.

B. SPECTABILIS VAR. **LATERITIA** possesses most of the characteristics of the typical species, but has brick-red bracts and is a little less rampant. It is very conspicuous when in bloom, and valuable as a decorative shrub. It flowers early in October and continues flowering till April.

B. SPECTABILIS VAR. **WARCEWICZII** has cerise bracts, and is perhaps the most brilliant and profuse flowering of all the varieties introduced into this country. It flowers from December to April.

B. SPECTABILIS VAR. **AURANTIACA** (?) has larger and claret-coloured bracts, and is less compact than Var. **Warcewiczii** for which it can be mistaken when the bracts of the latter have been bleached by the sun. It begins to bloom in January.

B. SPECTABILIS VAR. **BRAZILIENSIS** has very distinct rosy carmine bracts, and is also liable to be confused with the two last mentioned varieties

BOUGAINVILLEAS

towards the end of the flowering period. It comes into bloom after Var. Warcewiczii.

B. SPECTABILIS VAR. ROSA CATALINA is a beautiful strain from the Canary Islands with distinct rosy pink bracts introduced into the country by Mrs P. W. Stout in 1914.

The red bracted varieties are more delicate than the purple bracted and cannot easily be grown from cuttings: roots may be thus produced, especially under glass, but the growth is weak, and usually the plants die when repotted or planted out. Layering by "tongueing" in March or April and even in September is a more reliable means of propagating but the safest is "inarching" in spring.

Bougainvilleas thrive best in sunny and sheltered situations, and are not very particular as to soil provided perfect drainage is ensured. When fully established they require little or no water, in fact any excess in watering is injurious. A yellowish foliage is evidence of too much water. After the flowering period it is advisable to give the plants a rest and keep them perfectly dry until the foliage indicates that water is needed. The soil should be occasionally hoed, especially when growth commences, when well-decayed manure may be dug in and water given. Young plants require more water, and should be occasionally syringed in summer and protected from the direct rays of the sun. This precaution is all the more necessary for the red bracted varieties.

E. de C.

CHRYSANTHEMUMS

. Some time before the new chrysanthemum plants are expected to arrive soil should be prepared for them by mixing three parts of good loam with one part of well-rotted horse manure. This is to be thoroughly watered, and after several days turned over and watered and turned continually until it is used.

The young plants arrive from England packed in earth and moss and generally with weak, pale shoots that have grown out during the journey. The moss must be carefully picked out and the roots cut back a little where bruised or badly bent and the plants potted into No. 10 pots. After their long sojourn in the dark plants must not be exposed immediately to direct sun, and a position on the north side of a building or hedge should be chosen for the standing ground until the shoots become green. The pots can then be shifted to a place where they will get a little sun during the day and gradually become accustomed to a completely open position. By the beginning of March this should have been attained. One good watering a day will probably be necessary, early morning being preferable.

If the chrysanthemums are for exhibition only they will be kept in their pots and sunk in the ground over an inch or so of crocks for drainage. For garden decoration and for cut flowers they will be planted out when the pots are full of roots. An unshaded part of the garden must be chosen and the ground well broken up and manured (one basket

CHRYSANTHEMUMS

of manure to twenty-five square feet of bed) at least a month before planting and dug over several times at intervals. Four or five days before planting the bed should be watered, and on the day of planting well stirred and trodden firmly.

It is not easy to space plants satisfactorily at once, so before turning them out place the pots where the plants are to be and shift about until the arrangement is good. At least a foot must be left between each. The native gardener can do the planting when he sees the position. This brings one to the beginning of May, and some plants may show signs of premature flowers which must be removed: they are of no value. All tops must be pinched off, leaving about nine inches. In about three weeks' time new shoots will begin to grow out, of which only one is really wanted, but it is not wise to reduce to that at once in case of accidents. All except the top three should be removed, taking care not to break leaves, and when these three have become as thick as the parent stem another one can go. When the plants are tall enough to require staking the second shoot can be removed, leaving the best and most upright. This one will "break" in its turn, and its shoots will bear flowers, and only three must be allowed to develop. The plant should be in this last stage in September, and from now onwards all other shoots should be removed, whether coming from the stem or the roots. Flower buds will form in clusters of three or four. If fine blooms are wanted the number must be reduced gradually. By pressing downwards the little buttons will snap off, but it is difficult not to break away more than one intends to, and the beginner should use small scissors.

The preliminary preparation of the ground will suffice the plants until July, when a good top dressing should be mixed with the soil, and when flower buds form liquid manure may be given

GARDENING FOR THE SUB-TROPICS

freely. When the plants have finished flowering they should be cut down to within about six inches of the ground, lifted and replaced in good soil in a fairly exposed position. The simplest way is to dig trenches and put in the plants about a foot from each other, and press the soil around them, finishing with a good watering.

THE DISBUDDING OF CHRYSANTHEMUMS

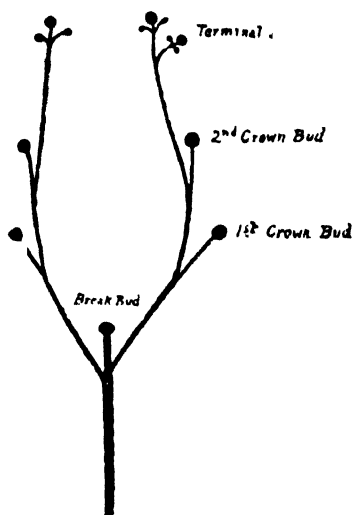
I do not propose to go into all cultural details, but as far as possible to limit my remarks to the disbudding which varies according to the number and size of flowers required on each plant. I shall divide chrysanthemums into three classes, and let it be understood that plants grown as standards or pyramids are purposely omitted. The three categories are:

1. Decorative plants.
2. Border plants.
3. Show blooms.

1. DECORATIVE.—In recent years "decorative" chrysanthemums have become a regular feature in all nurserymen's lists, but in this country practically any variety may be grown as a decorative plant as is witnessed by the masses of white, yellow, and bronze that we are accustomed to see in our public gardens. Such plants have been allowed to develop as they please, and the flowers are from terminal buds. They have developed in exactly the same manner as the two other shapes to be now described, but they have not been disbudded in any way, and if the flowers do not show all the wonders of colour and shape of which they are capable, still who shall deny that a border of chrysanthemums grown in this manner makes a beautiful show.

CHRYSANTHEMUMS

2. **BORDER PLANTS.**—I fear I must plead guilty to inventing a term, and goodness knows there are already enough gardening terms. I mean by "border" plants those that are allowed to carry about nine flowers to each plant instead of the regulation three or less when show blooms are required. I call them "border" plants because they make a much finer show in the borders than the larger flowers (each stuck up like a mop on its handle), while they are large enough to show



the peculiarities and beauties of the varieties, and are not too large to be arranged in a vase with other blooms. Grow show blooms if you will, but you will have a great many disappointments, and when you have allowed for the buds ruined by the cotton boil-worm and the blooms that have "damped off," not counting those that have been broken by the wind and half a dozen other accidents, possibly you will think that you have taken a vast amount of trouble for a very few blooms.

Needless to say chrysanthemums should be grown from cuttings each year and not allowed to develop from the old stools. Now the cutting will grow up for a time as an erect stem with leaves at intervals all down the sides. Sooner or later when the roots are ready little side growths will begin to show themselves at the angles between the leaves

GARDENING FOR THE SUB-TROPICS

and the main stalk. The plant is now said to be "breaking," and if you examine the top of the primary growth you will find a minute bud. *Now* is the time to cut down the primary growth if you wish to do so, and in any case remove the little flower bud known as the "break" bud (see diagram).

Having removed the bud select three shoots to be grown on, and take care to tie them to their stakes early so that they may not get broken. In the diagram only two shoots are shown, but that is only for convenience, and of course it is not necessary to grow three shoots. If you want an enormous bloom grow only one, or if you want more flowers and smaller grow more than three.

Your shoots will now grow on without side shoots till the next bud appears. This is known as the first Crown Bud, and after its appearance the shoot again breaks.

Here we must digress for a moment to explain that large flowers are usually grown from the first or second crown buds. In the nurserymen's lists you will see notes against the names of varieties indicating which bud is to be "taken." "Taking the bud" does not mean removing it as one might imagine, but indicates that growth of the plant is stopped at that bud in order that the whole strength of the plant goes to the development of the flower.

It is very doubtful if it is wise ever to take first crown bulbs in Egypt. The plants are so precocious and the early autumn so often very hot and damp that there is great danger of the flowers not developing, or doing so too early. I therefore advise beginners to wait for the second crown buds, and let me remark here what I should have said before, that these notes are only meant to be a guide to beginners, as they contain nothing of value to the experienced grower.

Having therefore removed the first crown buds

CHRYSANTHEMUMS

a difficulty at once presents itself, and it is one which can only be solved by experience and a knowledge of the peculiarities of the varieties you grow. Mention has already been made of the remarks in the lists about taking the first or second crown buds, and even in these lists one sees such remarks as "late second crown" or "early terminal," and remember these instructions refer to much cooler climates, so the only thing to do is to make careful notes about each variety you grow. Some of these varieties will flower very well on the second crown buds, but others (even if they are listed as second crown) will only flower well in Egypt on terminal buds. Now you will see the difficulty. If you want nine flowers on the plant and they are to be terminal blooms, you will only allow three shoots to grow after the removal of the first crown. But if you are dealing with a variety that will flower on second crowns, you should grow not three but nine shoots from the stalk which produced the first crown.

My Dear Beginner, do not give up in despair. The result may not be as good as it will be next year when you know your plants, but you will get a very pleasing result by growing on nine shoots until you know if they produce their second crowns too early. It is no good asking "what is too early or too late." My reply again is that so much depends on the weather, and the plants vary so greatly that the only guide is experience. However, having grown on your nine shoots, if you find that they are all producing their second crowns much earlier than the rest of the crowd, remove six of the shoots (two from each stalk) and grow on three shoots from each stalk, so that you will have nine terminal flowers. But here let me make it plain that nine second crowns will usually, if you can manage them, give much more satisfaction than nine terminals.

GARDENING FOR THE SUB-TROPICS

But to go back to the growth of the plant. The first and second crowns having been removed the terminal bud appears. This bud varies from the others in the fact that instead of being a single bud, as the crown buds are, it is surrounded by a whorl of smaller buds, and in the case of taking the terminal bud these smaller buds must be removed, leaving only the largest central one to develop into the flower. It is by no means an invariable rule that a crown bud is a solitary unit; sometimes there are two, three, or more crown buds of the same denomination, but they are to be distinguished at once from terminal buds, the largest of which nestles amidst its circle of little brothers, while the crown bud stands erect on its own stalk. In taking a crown one only reserves the better of the twins or the best of the triplets, but if the boil-worm moth is about in great numbers, do not be in a hurry to disbud; your flowers may not be quite as large as they would have been if you had disbudded earlier, but a slightly smaller flower is better than no flower at all.

With the terminal bud the growth of the plant ends, and therefore it is not a pleasant thing to find that the gardener in his zeal has removed the terminal buds. This has often happened to me, and has only served me right for not looking after my plants myself.

The only difference between the disbudding for "border" plants and show blooms is that in the case of the latter one restricts the number of buds to one on each stalk or three or less on each plant. It is a great satisfaction to show enormous perfect blooms, and as hinted above many varieties only develop all their beauties when grown large; but to produce such blooms requires a lot of work and you must be prepared for a lot of disappointments, and the chrysanthemum with only one to three flowers is not altogether a lovely plant, however beautiful the flowers may be.

CHRYSANTHEMUMS

In conclusion I ought to remark that all side shoots and suckers except those purposely retained should be removed all through the growth of the plant from the time the first break takes place, in order that the whole energy of the roots may be concentrated on the production of the flowers.

H. P. K.

GARDENING FOR THE SUB-TROPICS

A SELECTION OF CHRYSANTHEMUMS

FOR LARGE BLOOMS :

White	.	.	.	Mrs G. Drabble. Louisa Pockett. Queen Mary.
Golden	.	.	.	F. S. Vallis. D. B. Crane.
Lemon	.	.	.	Mrs R. C. Pulling.
Pink	.	.	.	Mrs E. A. Tickle.
Amaranth	.	.	.	Reginald Vallis.
Purple silver reverse	.	.	.	Viscountess Chinda.
Crimson	.	.	.	Captain Fox. Pockett's Crimson. Mrs Geo. Monro.
Chestnut red	.	.	.	Thorp's Beauty.

FOR DECORATION :

White	.	.	.	H. W. Thorp. Mme. R. Oberthur.
Golden	.	.	.	Lizzie Adcock. Framfield Glory.
Pink	.	.	.	Doctor Englehard. Uxbridge Pink. Rayonnante.
Crimson	.	.	.	Crimson Source d'or. Exmouth Crimson.
Chestnut red	.	.	.	Mrs A. Brooker.
Bronze	.	.	.	Source d'or.

GERANIUMS AND PELARGONIUMS

My chief encouragement to write on these plants has been a leading article in a certain journal, saying that the experiments and even the failures in gardening of one may be of interest to others.

If failures could command interest I should write with a light heart indeed, for out of many hundreds of cuttings of pelargoniums and the choicer geraniums that I have taken in the last few years the majority withered or rotted away.

I find it easy to get ninety per cent of the ordinary red or white geranium to live, but I have lost almost as large a proportion in some batches of cuttings of the more delicate plants: perhaps this article may induce others to help me with their advice. What follows is only the result of my own experience in gardening in a first-class Nile loam.

DATES FOR TAKING CUTTINGS

GERANIUMS.—I have found from the beginning of the cool weather, some time in October to the middle of December, to be the best period for taking cuttings: and after that February as recommended in the February, 1917, number of the journal.

PELARGONIUMS.—End of February to the end of May; recommended in the February, 1917, number of the journal.

I have never tried taking cuttings at this time.

GARDENING FOR THE SUB-TROPICS

Owing to cutting back in the winter there are very few shoots in February that seem suitable for cuttings: and as they begin to show buds almost immediately I have never had the heart to take cuttings and delay the flowering season. But it should be worth trying, for cuttings taken then would produce plants that would be large and full of flowers, either in beds or pots in the spring of the following year.

Mrs Marsham recommends the end of May and also when the plants have ended flowering, which would be in June or July.

I find I get least failures from 15th October to the end of November.

I prefer then autumn to spring both for geraniums and pelargoniums, though I know of no one else who chooses this period. I am generally away from Cairo during the latter part of the summer, and it is possible that the death of many of my cuttings during this time is due to the irregular watering, etc., of an Egyptian gardener.

Spring cuttings, especially those of pelargoniums whose early growth is very slow, have certainly one advantage over autumn ones if the plants are bedded out at the proper distance apart. The beds filled with autumn cuttings look very empty during the first flowering season. This can be avoided by keeping autumn cuttings as pot plants during their first year and bedding out one-year-old plants only.

METHOD OF PLANTING

I have had no experience in Egypt of planting cuttings in the ground, but I believe they should be watered by rose only until they have struck, and the sooner they are then taken up and put where they are intended to flower the better.

GERANIUMS AND PELARGONIUMS

The soil for boxes and pots for geraniums should be sandy. One-half sand, a quarter unrotted stable manure, and a quarter leaf-mould and earth is suitable, but you may make any mixture you like provided it is sandy. Nile sand is perhaps better than desert sand, though I have seen cuttings thriving in gritty Koubbeh sand mixed with fresh stable manure. I should be very glad of advice as regards the choice of cuttings: I prefer those that are not too young and juicy and yet not too old and wooden, cutting them where there is a ring which marks an eye. In Ireland we split them up half an inch: it does no harm. After being prepared they may be kept twenty-four hours to dry before planting. Plant them deep, say half their length underground, either one in each pot or several round the edge. Water them as infrequently as possible: I should be very glad of advice in this respect and on the depth of earth in the pot: some growers leave half an inch or more between the earth and the top of the pot, some fill the pot so full that there is almost no room for the water to lodge. The treatment is the same if planted in boxes. Leave them in shade for a few days and then in broken shade. Of course the season of the year must be considered: quite young cuttings will enjoy a December sun but would be killed by an April one. Transplant into larger pots or into the ground when the roots begin to show through the bottom of the pot. The soil for the larger pots may be much less sandy, say one-third sand, one-third earth, and one-third leaf-mould and manure. In these pots allow at least half an inch at the top for watering.

All the above holds good for pelargonium cuttings, but they need less sand and more water. They strike more slowly than geraniums and grow more slowly, especially during the winter. They need not be left to dry before planting.

Raising from seed is exactly as with other

GARDENING FOR THE SUB-TROPICS

flowers. The plants seed most in June and July, and I have found the seeds taken then germinate best. Each seed is in a shell which has a long fluffy spiral tail: let this spiral burst fully from its sheath before gathering the seed. I found October-November the best time for sowing. Sow from one to three in a pot: if more than one sow each seed far apart. Before sowing take each one from its shell, and reject those that have perished or seem shrunk up. They may be soaked in water for a day or two like sweet peas. They need an ordinary seed soil on which they should be laid and sand sifted over them. They germinate slowly, especially if sown too deep: pelargoniums can take six weeks before appearing. When their true leaves are well formed, and they are about an inch high, repot or bed them out. They produce much larger and more profuse plants in beds than cuttings do during their first year, so allow plenty of space. The flowers of geranium seedlings are sometimes poor the first spring, but improve greatly in subsequent years. They generally come true to the parent plant, but pelargoniums—if there are many varieties in the garden—often cross and new varieties are obtained. The proportion of the latter's seed that fail to come up is sometimes very large. On two different occasions I bought a half-crown packet of seed from a first-class English seedsman. There were twelve seeds in each packet, and not one came up. Perhaps they were planted too deep.

BEDDING OUT.—These remarks apply to first-class Egyptian soil. Allow plenty of room even at the cost of the bed looking a little bare during the first year. Geraniums should be at least fifteen inches apart and pelargoniums two feet. A full-grown pelargonium can fill a space three feet in diameter, and its roots spread still further. Geraniums need a well-drained soil, for which reason probably Mrs Marsham says that they do

GERANIUMS AND PELARGONIUMS

best when planted on a slope or a bank. I have never had a chance of trying this: but as an instance of their objection to water-logged soil several geranium beds in Gezira lost more than half their plants through the protracted period of infiltration during the Nile flood of 1916, whereas I noticed very few dead pelargoniums.

An Egyptian gardener will, if allowed, plant his geraniums on a raised bed like those in an English garden, which can only be irrigated by spraying. There are disadvantages in this, such as loss of the gardener's time in spraying, spoiling of blossoms, difficulty in manuring, etc. Geraniums can be grown without difficulty in the ordinary beds, but they must not be over-watered if the best results are hoped for. Pelargoniums on the other hand can be watered more freely, and the young cuttings of either need more water when bedded out than the seedlings do.

Different coloured flowers vary greatly in their endurance of an Egyptian sun. When trying a new variety I keep it in pots for the first twelve months, and then bed it out in the degree of sun or shade that promises to suit it best. Speaking generally, the blossom of deep red geraniums and of pelargoniums with large dark spots wither when exposed to a really hot sun: these should be encouraged to flower early in the year, and are better suited for pots than beds. Geraniums in beds make much leaf and wood at the expense of good blossoms, and I believe need little or no nitrogenous manure. On Mr Brown's advice I give phosphate and potash manure when the young plants have really started, and once a year afterwards in the early spring. Pelargoniums thrive on all three natures of manure. In beds it can best be applied by spreading and forking in: in pots give it in a liquid form after a watering.

Many gardeners cut back their geraniums to a few inches from the ground in the summer, but I

GARDENING FOR THE SUB-TROPICS

have found this liable to kill the less hardy kinds. The plants make a great growth of new shoots towards the end of the winter, and if they are thinned out in January and February the plants give better blossoms in the spring : cuttings can be made from the cut branches. Root pruning also prevents excessive growth. It can be done by passing a sharp table knife around the plant and three or four inches from it, but only for about half the circumference at one time. It is especially useful when putting in young plants to fill empty spaces in a bed, otherwise they find it hard to fight against the spreading roots of the older plants.

Cutting back pelargoniums can be done after flowering, or perhaps better during the winter. It should be done gradually, so as always to leave a fair amount of leaf on the plant. The branches of pelargoniums spread very wide, and are but weakly attached, especially those of seedlings, and they often need the support of small uprights stuck into the ground.

R. G. W.

INDOOR GARDENING

The final touch of charm and beauty to a well-appointed and refined home is in the artistic arrangement of healthy and well-cared-for plants, etc., and whereas cut flowers are a luxury reserved for the comparatively wealthy or owners of gardens, a few growing specimens showing care in their selection, wisdom in their treatment, and taste in their arrangement will do much to compensate for their absence. We cannot dwell on this subject without thinking of the beauty of ornamental pots of ferns, palms, or small flowers among our table decorations: or the addition they make in the furnishing of our rooms when our windows are set in a frame of green and growing foliage relieved here and there with blossoms.

Indeed, window-boxes are perhaps the most ordinary of indoor gardens, though these at the outset demand special thought as to the quantity and quality of the plants and flowers to be grown therein, the aspect of the window whose outline they are to soften, and their relation to the outside world. Far more attractive to our personal way of thinking than the window-box filled with earth, wherein certain plants and flowers are expected to grow and thrive throughout an entire season, is one of slightly larger width wherein can be placed potted plants which can be changed at will when they are at their best, and to which can be given a pleasing variety as they each of them pursues its little day of beauty. Then, indeed, with a certain amount of creeping and overhanging foliage to

GARDENING FOR THE SUB-TROPICS

mask the front and sides of the window, and with a certain number of pots of flowers peeping out among the greenery, you can have a plethora of beauty to gaze upon when our gardens are lying fallow.

But gardening, whether of the outdoor or indoor persuasion, always makes continual demands upon our energies : and if we hope for success with our indoor plants which are called upon to exert their beauties away from their natural free surroundings, it behoves us to give them far greater attention and care to make up to them for all they are missing. We have, in fact, to combat the effects of stale and stagnant air, and maybe also of draughts, of dust and neglect, of used-up earth, of insect pests which increase with fearful rapidity : and many other disadvantages which are apt to discourage the amateur gardener unless he or she has a brave heart and an intensity of patience, and a true sympathy for the plants she wants around her.

Let us consider for a moment the ideal window-box and its initial requirements. It should be of a width of eight to ten inches, and certainly greater depth. It should be of similar dimensions to the window it is to frame, and should be fixed securely on its legs or brackets. If it is framed of wood it should be painted inside and out, should boast drainage holes along its base, and a metal drip pan under it to collect the drippings and to protect the floor or carpet from injury. Also there should be a light trellis or maybe a strip of netting or strings attached to nails at either end of the box and leading to the sides and the frame, so that creepers may find steps all ready for their delicate little tendrils when they aspire to mount higher : and then again the soil whether filling entirely the box or the pots enclosed therein must follow on the most approved formula for potting mixtures, a judicious combination of mould (leaf and fibrous), sand, charcoal, bone meal, and other fertilisers as the case may be,

INDOOR GARDENING

with a universal stratum of crocks and moss to prevent the earth from sifting through them and ensure perfect drainage.

Having given due thought to all these initial steps now comes the consideration of the future occupants of our indoor garden as from the standpoint of pot plants : since all more or less will come under this heading whether belonging to the families of palms, miniature trees and shrubs, ferns, foliage or flowering plants or creepers.

Most plants before being transferred to the house (we do not speak of cuttings) require entirely fresh soil in the pots to which they are to be confined in the future : and since their exterior growth depends almost entirely upon the nourishment of their roots the subject of these demands unending care. In the first place, a too large pot is to be deprecated almost more than a too small one, though when repotting care should be taken to allow sufficient space to hold water above the soil. A plant should never be repotted till its roots show signs of shortly becoming pot-bound, and when they have evidently exhausted all the goodness of the soil. It should then be carefully removed to a slightly larger pot, and after seeing that the drainage crocks are judiciously placed into position and the plant placed in well and truly, the interstices should be lightly filled with well-sifted soil packed between the roots with a flat stick. On the other hand, if plants are confined in small pots with but little soil they should be given much more feeding and stimulant, while some gardeners affirm that the flowering and leafage processes are increased by a judicious curtailing of the roots. We have heard it said that Japanese growers of the stunted trees gain their wonderful results by growing their specimens in oranges from which the interior has been removed, and curtailing the roots as they force their way through the skin. This is done over and over again till finally the whole tree

GARDENING FOR THE SUB-TROPICS

gradually becomes stunted. Whether this is true we do not know, but it shows the close connection which exists between the roots and the leaf stems.

Among all plants whose beauty of form and habit of growing have led to their being extolled as the most peerless among decorative adjuncts is the palm—indeed above all others the palm takes the palm! Here they are, of course, well known and of countless varieties, though not many of them from their size are suitable for house culture. But they are darling things, responsive to sympathetic treatment, and are not difficult to cultivate as a rule, though they call for certain care in their watering and draining and the cleanliness of their leaves. It is very desirable to keep them free from dust and insects, especially scale-lice: and to do this and to keep the breathing pores free from obstruction, it is necessary to give them an occasional bath of tepid soap-suds, or a good spraying when they are too large to immerse completely, and their fresh clean leaves, glossy and smiling, will be their own reward. I have heard it said that a tablespoonful of salad oil applied to the roots of a palm occasionally will add lustre to its leaves. Among the best known varieties of palms for decorative purposes are the *Kentia Balmoreana* and the *Kentia Forsteriana*, the *Cocos Palm* (species *Weddeliana*), very slender and graceful, and the *Latania* or fan palm, which is the ordinary coarse leaf palm, but which has a golden leaf variety very beautiful and much more rare.

Rubber plants and *Aspidistræ* are so well known that it is scarcely necessary to mention them except for their happy faculty of resignation to circumstances. They never seem to resent neglect, dirt, nor practical starvation, though they appreciate care and an occasional bath with soap-suds and a certain feast of fresh soil, and flourish like a green bay tree. For our halls and spacious living-rooms we must recommend the beauties of small *Eucalyp-*

INDOOR GARDENING

tus trees, the Australian Oak or *Grevillia Robusta*, the miniature variegated Maples whose leaves turn such glorious colours, and smaller varieties of Bamboo, which are not so well known among decorative house plants as they deserve to be. They lend themselves to easy cultivation, and are extremely graceful in outline and very restful to the eye of the beholder.

Ferns are probably the most generally grown foliage plants in the world : and though Egypt is not a peculiarly suitable place (from its heat and sunshine), they can be cultivated without too much trouble, and are very grateful to the eye. The so-called Asparagus fern is no fern at all but a variety of *Asparagus* which is one of the most popular of our creepers : while equally adaptable and useful is the very freely growing *Asparagus Sprengeri*, whose long trails will mask the rigid contours of a window-box, or hang from a basket with equal profusion. I hear there is a variegated species of the *Asparagus Sprengeri* (which is easily grown from seed, by the way), which is admirable in lightening the effects of the *A. Sprengeri*.

Two other very favourite creeping plants which so far have escaped my notice are *Smilax* and *Maurandya*, the former very suitable as a close green background, while the latter is specially suitable for the front of the window-box as it masks the edges.

Of the more ordinary ferns we have a hardy growth of Maidenhair which does well though it droops and wilts in the sunshine. However, if it shows signs of fading away altogether it should be cut down ruthlessly, and kept well watered and away from the sunshine, and hey presto ! in a few weeks' time it will be uncurling its new shoots with enthusiasm. My old grandmother, who was very knowledgeable on the subject of ferns, used to give them a weekly watering of weak tea, which

GARDENING FOR THE SUB-TROPICS

must have suited them splendidly, for never do we remember a finer collection than those she tucked away during the summer in her empty fireplace, an indignity which most would have violently resented. Ferns, as also foliage plants and palms, will never really flourish indoors without regular watering: and the best manner to do this is to immerse their pots frequently in big tubs or baths till the water comes as far as the tops of the pots though without flowing over them. But an important feature in such watering or immersion baths is the necessity for draining the pots thoroughly afterwards, so that they never be left to stand in water—a proceeding which is often fatal to their fern occupants. If this is done for half an hour at a time, and the leaves washed or sprayed at the same time, your foliage favourites will never look sick nor sorry. If at any time you notice yellowing leaves appearing in a pot you may be fairly certain your plant has been too freely watered, or that some insect pest is at the root of the trouble. Then is the time to have recourse to more drastic remedies, to inquire into the ventilation of the rooms, and see if that is all right, and to examine the interior of the pot itself and see if it is harbouring any noisome insect which is preying on its roots. If so, all you have to do is to wash it out well with clear water which has been resting on slaked lime, and remove the offending insect, and no other will take its place.

Among the flowers best qualified to give good results and promise for indoor planting must be mentioned the ever-useful Geraniums, Verbenas, Violets, and Freesias, and many of the ordinary bulbs such as white Paper Narcissi, white Roman Hyacinths, Jonquils, and Daffodils. Tiny pots of Lilies of the Valley can be grown in Egypt, and are delicious for the spring if started sufficiently early—in October if possible. The process of forcing them (so says an American authority)

INDOOR GARDENING

consists essentially in keeping the roots moist and at a uniform temperature of 75 degrees Fahr., and these roots should be then planted in either sand or soil or even sphagnum moss, watered thoroughly, and placed in a dark warm place such as a closet or cupboard. After a fortnight or so the leaves will show signs of development when they may be brought out into the light by day, though they must be returned to the warm darkness during the night. Both leaves and flower buds will be ready in about three weeks, and with the opening of the latter the plants may be relegated to a cooler place.

Stephanotis is a wonderful climber for indoor use, and its fragrant waxen blooms are a perfect vision of delight when trained up the sides of a window-box. Japanese Morning Glories are likewise to be recommended for similar purposes—the seedlings being started between layers of wet blotting paper till they become swelled. Sweet Peas can be started the same way if one likes, and the sweet potato or Yam makes a most fascinating creeper if grown in a wide-necked bottle after the manner of a Dutch bulb. When the roots of the sweet potato fill the water-filled receptacle, they can be curtailed by a third of their length, and very quickly will begin to appear the glossy green leaves covering the upper half of the tuber. The purple flowers somewhat of the fashioning of the Morning Glory are remarkably decorative, and in a very short time the unsightly vegetable will have developed into a free growing and decorative addition to our indoor garden.

We might continue our subject indefinitely, but we trust that these few hints will inspire our readers with such interest that they will pine to put them into execution.

N. G.

ROOF GARDENING

When I first thought of gardening on the roof, I was told that the combination of sun and wind would effectively prevent anything from growing there, but two years' experience has proved that this is not the case, and that flowers and even vegetables can be grown in pots and boxes without any serious difficulty for at least eight months out of the twelve.

A certain amount of shade is undoubtedly necessary for seedlings, and as the whole of my roof was exposed to the sun I put up a small matting shelter over the corner of it. Some protection from the wind is also necessary, but this is provided to a certain extent by the parapet walls which surround almost all flat roofs.

The other essentials are flower-pots, boxes, earth, manure, and a water supply. Any old boxes will do, but the shallower ones are only suitable for seedlings. For planting out, the boxes should be at least twelve inches deep, otherwise the earth will dry too quickly, and they should, of course, have drainage holes in the bottom, and stand clear of the roof on bricks or wooden battens, so that the water can run away. I find it is a good plan to stand my larger boxes about twelve inches from the parapet wall and to put pots in the intervening space which is more or less sheltered from the wind and sun.

The carrying of earth up to the roof involves a certain amount of trouble, but if good Nile soil is used in the first place, very little renewal is neces-

ROOF GARDENING

sary, provided a certain amount of manure and sand are added from time to time, and the boxes are allowed a period of rest between sowings. All the plants will require manure after they are pricked out, and this should be mixed with the earth before the plants are pricked out. I find that pigeon manure is the most satisfactory, as it is easily obtained and can be stored in a small space.

The extent to which the different plants should be watered is largely a matter of judgment in each case, but it may be taken as a general rule that more frequent watering is necessary than in a garden.

Most of my plants are watered once a day in winter and twice and even three times a day as the weather gets hotter. Tea leaves spread on the tops of the flower-pots are very useful for keeping the moisture in.

With ordinary care almost all the commoner annuals can be grown, and I have been especially successful with *Cosmea*, *Mignonette*, *Verbena*, and *Nasturtium*. All of these may be sown in September, October, November or December, but I shall not recommend sowing on a roof earlier than this on account of the heat.

Chrysanthemums are very easy to grow in pots, and two which were given me two years ago have with judicious dividing turned into twenty-one healthy-looking plants.

Freesias are almost more satisfactory than anything as the tubers are easy to keep from year to year, and if they are planted at intervals throughout October they will be in flower continuously during February and March. They require liquid manure before they come into bud.

My "kitchen garden" consists only of Lettuces, English Parsley, Mustard and Cress, and Radishes. Lettuces do well when sown any time between the beginning of September and the end of March, and contrary to the usual practice I

GARDENING FOR THE SUB-TROPICS

replant the surplus seedlings after thinning out and find that they mature just as well, though more slowly than those which are left in the original seed boxes. Cabbage lettuce being a small compact plant, it is the best variety for growing in boxes.

The boxes used for growing English parsley should be at least eighteen inches deep to allow sufficient room for the roots. Both lettuces and radishes require manure which should be mixed with the soil before the seed is sown.

It is hoped that the foregoing elementary hints may encourage readers who are not fortunate enough to possess gardens to start gardening on their roofs or balconies.

A. F. W.

DAMPING OFF

SYMPTOMS.—When certain kinds of seeds are sown thickly and are kept very moist, the young plants, especially in shaded places, turn yellow and begin to die off in patches as soon as they appear above ground. Each affected seedling, when examined at an early stage of the disease, is seen to possess weak, thin, and somewhat shrivelled places on the stem near the surface of the soil. On account of this weak point the upper part of the plant bends, or topples over, in a characteristic manner. It is noticed that soon after one seedling is attacked others near it become similarly affected, and the disease spreads outwards in all directions until all the plants in the seed bed are reduced to a rotten mass, on which small patches of white "mould" may be seen.

A new batch of seedlings raised on soil which has already carried a crop of diseased plants almost always becomes attacked, and experience teaches that the cause of the infection remains active in such soil for many months.

Cruciferous plants, such as mustard and cress, are especially liable to "damp off," and the disease is sometimes prevalent on Spurrey, Maize, Mangel, and Clovers.

Some seedlings such as Peas, Barley, Poppy, Potato, and others appear to be exempt from the disease.

CAUSE.—The disease is caused by the fungus *Pythium de Baryanum* Hesse. The mycelium of the parasite is readily observed within the tissues

GARDENING FOR THE SUB-TROPICS

of a seedling which has damped off : it consists of generally non-septate, branched hyphæ which derive their nourishment from the cell contents of the plant through which they ramify. For a short time the fungus is confined within the body of the diseased seedling, but after extending itself through all parts of the latter, the hyphæ grow out into the surrounding moist air, and are able to reach across short distances to healthy neighbouring plants, which they immediately penetrate : in this manner the disease can spread from plant to plant. Moreover, the toppling over of the affected seedlings brings the fungus into contact with adjacent plants, and aids the distribution of the disease.

After a few hours the fungus produces various kinds of spores, some of which give rise at once to fresh growths which enable the fungus to spread at a rapid rate.

Others may remain dormant on or underneath the surface of the soil and cause the infection of seedlings which may be grown on the land afterwards.

PREVENTION AND REMEDY.—(a) Sow thinly and avoid excessive dampness of the seed bed.

Usually much more water is given to seedlings growing indoors than is necessary for their vigorous growth. The fungus is specially invigorated by moist conditions, and its hyphæ more readily penetrate plants containing superabundance of water.

(b) Avoid shade for the seed bed, and provide for the circulation of air among the seedlings.

(c) Carefully take up with a certain amount of surrounding soil, and burn all plants as soon as the disease is observed. In this way the spread of infection to the remaining plants may often be averted, whereas if the fungus has become established in the seed bed it is almost impossible to curtail its ravages.

(d) Soil upon which "damping off" has

DAMPING OFF

previously been noticed should not be used as a seed bed: in case this practice cannot be carried out, burning refuse on the surface of the land tends to destroy the fungus and its spores.

(e) Deep ploughing so as to bury the upper layers of the soil containing the spores is beneficial.

Massey, in "Diseases of Cultivated Plants," says that probably all seedlings are liable to attack when conditions are favourable. Even stored potatoes where "sweating" has occurred have been attacked. Although this disease is considered as a scourge by every gardener yet in truth its occurrence is invariably due to neglect. It can only possibly exist where seedlings are too densely crowded, or where seed beds are located in damp stuffy localities. The fungus cannot exist in open ground exposed to wind and sunshine.

Soil that has produced a diseased crop should be "sterilised."

The worst effects always follow over-watering, too much shading, and the presence of too much organic matter, such as decaying manure in the seed bed.

On account of the freedom of clean sand from organic matter, it is sometimes recommended to sow in this material the seeds of plants which are very liable to damp off. The seedlings cannot, of course, live long in sand which contains very little plant food. They must therefore be transferred to soil as soon as they have formed roots. The amateur might do well to give Massey's recommendation a trial regarding the sterilisation of the soil.

The principal of the operation is to heat the soil to a temperature which will destroy anything it may contain harmful to vegetation.

The original practice was to circulate steam among the soil, but sterilisation by dry heat has been found more adaptable to the needs of the small growers, not only are spores of fungi killed

GARDENING FOR THE SUB-TROPICS

but seeds of weeds as well as eel worms, etc., are also exterminated. Almost all up-to-date market growers of Tomatoes, Cucumbers, etc., in England now possess the necessary apparatus for treating the quantity of soil which they require. Various kinds of sterilisers are on sale, some of which are suitable for dealing with a bucketful of soil at a time. It is, however, unnecessary for the amateur to purchase a special heater, as it is quite possible to sterilise small quantities of soil in any old bucket or large pan. To thoroughly sterilise the soil it must be heated to a temperature of 200 degrees Fahr., and be maintained for an hour or more at a temperature exceeding 180 degrees Fahr.

Apart from the destruction of injurious organisms, it has been found that the process leads to an increase of ammonia in the soil. It is not known how it affects all plants at all stages of their growth, but in the case of chrysanthemums it has been found to result in the production of larger and earlier flowers. This phase of the question, however, is outside the purpose of the present note, and we touch upon it only to bring a most interesting field of experiment to the attention of the amateur flower grower.

KEEPING CUT FLOWERS FRESH

Nowadays when flowers play such an important part in the decoration of the house, the care of cut blooms is a matter worthy of serious attention. There is little doubt that an enormous number of blossoms is wasted simply owing to the careless manner in which they are commonly treated.

Whenever possible flowers should be gathered in the early hours of the morning before the dew has disappeared: it will be found that these specimens last longer than those which have been exposed to the sun for hours, unprotected by the shining drops. When buying flowers at shops try to secure those which are newly opened. Many blooms are truthfully described as freshly gathered, yet they will not last for any length of time because they have been fully expanded on the plant for days. A little experience will enable the buyer to distinguish between those which are newly open and those which are really old.

REGARDING STIMULATION.—It goes without saying that all flowers in vases should be provided with fresh water daily. Wherever the stalks are of a woody nature it is an excellent plan to pare away a few inches of the outer skin: this induces a free absorption of moisture. Soft stalks may be split upwards to bring about the same result. All cut flowers should be kept out of sunny windows, as the hot rays are apt to fade the blossoms very quickly.

By adding carbonate of soda to the water in which the flowers are placed, in the proportion of

GARDENING FOR THE SUB-TROPICS

a teaspoonful to a pint, it is possible to lengthen the life of cut flowers. The action of the chemical tends to increase the power of absorption in the cells of the plant. A weak solution of camphor and water will have a similar effect. To keep the water sweet and clean it is an excellent practice to add a small lump of charcoal or salt to each vase.

Sometimes flowers are received in a very faded condition, but these need never be thrown away without attempting to revive them. If the blossoms are simply languishing because they have been out of water it is possible to restore them effectually to their proper condition. First of all cut a little off the ends of the stalks, then secure a bowl of very hot water (not quite boiling) and plunge the stalks into it. Transfer the whole to a dark cupboard, and examine in about an hour. You will find that the flowers have revived wonderfully, and are ready for removal to the vases. Even should the flowers be rather old they may be stimulated by the addition of salt or camphor to the hot water.

S. L. B.

POTPOURRI

In making potpourri no shrivelled petals should be used nor flowers that have been picked a day or two previously, and have already done good work in the drawing-room or on the dinner-table. Pick fresh, well-expanded blooms, let us say dark scented red roses, on a sunny dry day, and whilst still warm separate them from their stalks and spread them in trays in a warm place to dry. The quicker the petals are dried the better they will keep their colour.

Break up dry lemon peel and dry bay leaves, and scatter among the dried rose petals, then sprinkle with spices and turn into a jar, adding some whole cloves. A useful spice mixture can be made of an ounce of orris root powder and three to four ounces all spice (powdered cloves, cinnamon, yellow sandal wood dust, cardamon seed, etc.), mixed and moistened with lemon or lime juice till crumbly. To give a strong and lasting aromatic scent, pour twenty to thirty drops of any essential oil (lavender, bergamot, roses, etc.) over another ounce of orris root powder, and add to above before sprinkling rose petals. Instead of rose leaves other flowers separately or combined with sweet briar may be used for making potpourri. A potpourri made of only dark red scented roses, however, will present a most beautiful appearance, especially if placed in a large black bowl and a few whole flowers (preferably blue such as delphinium) are strewn on the surface.

In order to preserve flowers whole, and so that

GARDENING FOR THE SUB-TROPICS

they retain a good deal of their natural form and colour, the following method is recommended: Gather the flowers as soon as the blossom has fully opened and suspend them from the stalk, head downward, for a few hours in a warm apartment. Get a strong wooden box, or preferably one made of tin, and a sufficient quantity of sand to fill it. If possible the sand should be of the kind known as silver. Pour the sand in a bowl of fresh water and wash it until nothing remains but the pure whitish crystals. The sand is then spread in a thin layer to dry, when dry place in some thick crock vessel and put into a hot oven, and let it remain there until it is so thoroughly warmed that one can scarcely bear to bury the hands in it.

Next obtain a piece of stout cardboard to fit into the bottom of the box. Through the cardboard insert a number of long and strong pins, one for each of the flowers to be preserved.

Now get the blossoms, and after adjusting the stalk of each to the height of the box, press the stalk down on to a pin so that it is held in an upright position. When the card is full place it gently in the box. The warmed sand should now be put into a paper bag or other receptacle from which it can be easily poured. With a steady hand begin to pour the sand into the box, letting it trickle in evenly and slowly, and taking care that the flowers are always in a vertical position until the crowns of the flowers are reached. Now comes the delicate part, and that is to arrange the petals in their right order, and so that they are pressed in their proper position. When the box is full, cover it and place in a dry cupboard for at least two days. Finally, the sand is poured off. This must be done with extreme care as the flowers are in a highly brittle condition. When all the sand has been emptied, the cardboard is removed from the box and each flower taken away from the pin. If the drying process has been thorough the flowers

POTPOURRI

will keep for an indefinite period. They must not, however, be exposed to direct sunshine as this would tend to fade their colour. Sprigs with leaves attached may be dried in this way, but it will be found that much of the intensity of the green is lost in the process.

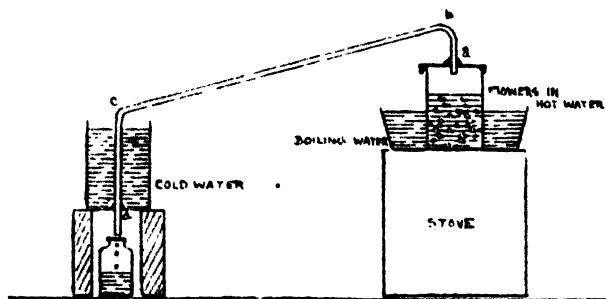
E. de C.

HOW TO MAKE YOUR OWN PERFUMERY

The art of making perfumes from the flowers which grow in our gardens is a delightful one, and the simple process entailed would be much more in use if more generally known; and it is the purpose of this article to describe how, with simple contrivances, any lady may make her own scents. In the blending lies the charm of this pursuit, and individuality may express itself almost unhindered.

In the Cairo copper bazaar (Souk el Nahassin) one often sees tall, graceful pots with a hollow-domed cover, with two long tin spouts sticking out at right angles. This is the "perfume still" which the natives use to produce those scents of Araby which make the scent bazaar famous throughout the world.

For a pound one may purchase a good sized copper "still," but if one wishes to experiment with a home-made still all that is required is a couple of cocoa tins and a metre of metal tubing, about half an inch in diameter.



Perfume Still.

The cover of one of the tins is pierced and the

TO MAKE YOUR OWN PERFUMERY

end of the tube soldered through it. The bottom of the other tin is then pierced, and the other end of the tube soldered through it. The tube should be bent as shown. The bend (c) of the tube should be lower than the bend (b). This is necessary in order that any water in it will run out.

For a couple of piastres any native tinsmith will solder the tube as required at the two points marked (a) and (d) in the sketch. Fill the first cocoa tin with flower petals or small flowers, then pour in hot water, put on the cover which has the tube soldered in it, and place in a pan or basin of boiling water on a stove. The other tin is supported upon a couple of bricks and filled with cold water, and a glass jar is placed underneath it to collect the drops of the distilled liquid. The attar or perfume will be found floating upon the surface of the water in the jar. It is then collected and put in a small bottle to which a teaspoonful of alcohol should be added.

Never mix two kinds of flowers in the still. The strong scented flowers give the best results. Orange flowers, for instance, are most satisfactory in Egypt, but sweet basil, jasmine (ful), carnations, and even geranium leaves should be tried.

We may also make the essential oils of lemon or orange peel in the same way; and if the first lot made is not used to flavour a cake, then you are not a good housewife. These fruit essences add zest to the flower scents, and the clever woman may produce wonderful results by mixing them with the different kinds of perfume. At times a clove or a bit of cinnamon added to a perfume gives it a pleasant oriental flavour.

Violet scent cannot be obtained with the above process. Violets have a most fleeting and delicate odour; and to preserve this the simplest way is to get a flat cardboard box and a glass plate to fit it.

Any photographer will give for the asking a cardboard box with a tight-fitting lid in which

GARDENING FOR THE SUB-TROPICS

negative plates are kept, and also a used negative plate which just fits the box. Wash the glass plate clean in hot water and thoroughly dry it. Then cover it with suet a quarter to half an inch thick. You may either spread on the suet with a knife, or—placing the plate in a dish—pour melted suet over it until it is well covered. After the suet has solidified, remove any superfluous suet from the edges and place the plate, suet side up, into the cardboard box. Then spread over the suet violet flowers, shut the box and leave for two days. Then take out all the old violets and fill the box again with fresh violets for another two days. This should be repeated at least four up to six times, when our suet will have become impregnated with the violet scent. Now scrape off the suet with a spoon into a marmalade jar and pour in enough alcohol to cover the suet, close the jar tightly, and after shaking up the contents a few times let it stand until the next day, when the alcohol will have absorbed all the perfume, and may be poured into a bottle ready for use.

Do not crush the violets into the suet or the scent will be ruined. They should simply be laid upon the surface.

TO MAKE SACHET POWDERS

Cloves, cinnamon, cardamon seed, dried rose leaves, and sandal wood powder may all be ground up in a small native hand coffee mill, and the powder wrapped in small paper packets. A few drops of our perfume may be added to give it a more distinctive flavour if desired as well as dried geranium leaves or sweet basil.

Sachet powders when packed away with the linen, with letter paper, or carried in a bag, impart a most delightful fragrance, and as moths abhor the spicy odours, they are useful in wardrobes where clothing is kept.

R. H. B.

FOREWORD TO CALENDAR

THIS calendar has been compiled to be a reminder of times and seasons for work in Cairo gardens. Details of methods recommended, and of general recipes, will be found elsewhere in the book, and such continual directions as "keep the soil well stirred," "give liquid manure after watering," have been omitted, as they would have to be repeated every month under every heading.

"Success in gardening operations, be they large or small, depends not a little on doing the thing at the right time."

M. S.

CHAPTER IX

A CALENDAR FOR THE FLOWER GARDEN

JANUARY

ANNUALS.—To ensure continuity of bloom, remove all dead flowers, allowing no seed to form. Sow in situ seed of *Arctotis grandis*, *Leptosyne maritima*, and various kinds of *Calendula* which are quick growing and useful for filling in vacant places.

Water all annuals sparingly as excessive moisture is detrimental to successful cultivation. *Antirrhinums*, *Clarkias*, and *Stocks* are especially susceptible to over-watering. Frequent stirring of the surface soil will conserve the moisture and prevent the ground from becoming sour.

Staking must be attended to, and suitable supports supplied for the tall growing varieties.

To annuals in pots give occasional applications of liquid manure, commencing with a weak solution and gradually increasing the strength. By careful treatment fine specimens of *Nemesia*, *Salpiglossis*, and *Schizanthus* can be obtained.

Keep a sharp look out for *aphis*, and directly this pest appears spray with a solution of soft soap and water.

AMARYLLIS.—If propagation is desired lift and divide, otherwise leave undisturbed, withhold water from old clumps.

GARDENING FOR THE SUB-TROPICS

BULBS.—Apply liquid manure to well-established plants which are about to flower.

Plant *Lilium*, *Gladioli*, and *Tuberosa*, using a compost of Nile earth and well-rotted manure, adding a little coarse sand to assist drainage. It is a good plan to encase the bulb in sand, as manure coming in direct contact with it is most injurious. Pot the bulbs firmly and not too deeply.

CACTI.—Continue to keep dry.

CARNATIONS.—Propagate by cuttings selected from strong shoots removed with a heel.

CHRYSANTHEMUMS.—Propagate by detaching sturdy shoots from the base of the mother-plant with a few roots adhering, as this greatly assists the development of the cuttings. Cut back to three centimetre length, remove the bottom leaves and insert in sand. Keep the cuttings shaded until they become established.

CINERARIAS.—Water sparingly, and after watering give an occasional application of liquid manure.

CREEPERS.—*Antigonon*, *Jasmine*, *Quisqualis*, and all others that have flowered and will not bloom again till the spring should be well thinned, cleaned, and cut back.

LAWNS.—Where *Negil* or *Lippia* is grown, the watering should be done on sunny days in the morning in order that it may be dry before night, and so withstand the fall in temperature which otherwise will cause it to turn brown.

PENTSTEMON.—Make cuttings now. Thus propagated they form compact plants and are true to colour.

PETUNIAS.—Propagate by means of cuttings, nipping the ends of shoots, and inserting in sand in a sheltered position.

ROSES.—Continue making cuttings of briar for stock as directed for December. Transplant those required for new situations.

SANTOLINA.—Renew borders by means of cuttings.

CALENDAR FOR THE FLOWER GARDEN

SHRUBS AND TREES.—Dig in manure around established plants. Transplant if desired, always cutting back beforehand, so as to lessen transpiration. In the case of evergreens it is necessary to dig them up with a good ball of earth, and if the plants are to be carried any great distance, a packing of straw and weeds bound round with a rope will prevent the soil from crumbling away. In the case of deciduous trees, this is not necessary. Take care to replant the tree at its previous depth. Most shrubs and creepers such as *Acalyphas*, *Bignonias*, *Bougainvilleas*, *Cestrums*, *Lantanas*, *Oleanders*, *Poinsettias*, etc., may be propagated in the open ground by means of cuttings.

Do not make the cuttings more than twenty-five centimetres long, and when placing them in the ground allow one or two buds only to show above the surface. Cuttings must be taken from well ripened wood and cut cleanly at the base just below a bud.

THUNBERGIA LAURIFOLIA.—Increase by means of cuttings under glass.

VIOLETS.—Apply poudrette cautiously, a teaspoonful to a pot. Pinch out all runners as they appear in order to produce fine blooms.

FEBRUARY

ANNUALS.—Sow for summer flowering, *Asters*, *Coreopsis*, *Cosmea*, *Gaillardia*, *Gaura*, *Lindheimeri*, *Gomphrena*, *Vinca Rosea*, *Zinnia*, also *Balsams* and *Portulaca*, both the latter in pots. Place seed pans in full sunlight to hasten germination.

CARNATIONS.—If special fertiliser is required apply as top dressing when the soil is damp

Superphosphate 100 grs. per sq. m.
Sulphate of ammonia 50 grs. per sq. m.

GARDENING FOR THE SUB-TROPICS

CHRYSANTHEMUMS.—Continue making cuttings.

DAHLIAS.—Divide and replant tubers. See that each tuber has a portion of stem and eye attached.

GERANIUMS.—Continue making cuttings. Suitable ones are obtained by severing the stalk where there is a ring which marks an eye, then splitting them half-way up. Keep twenty-four hours before planting in order that they may dry. Plant deep, to half their length under the ground, water sparingly. Place in the shade for a few days, then gradually remove into the sun.

ROSES.—Withhold water from the beginning till the end of the month in order to retard their growth, then prune old established plants. When pruning operations are completed, manure and then water. If a special fertiliser is required apply as a top dressing when the soil is moist

Superphosphate 80 grs. per sq. m.

Sulphate of ammonia 25-30 grs. per sq. m.

CLIMBING ROSES should not be pruned now, wait until they have finished flowering in June and then only thin out dead wood and train.

SHRUBS AND TREES.—Continue making cuttings, and sow seed in pots of Bauhinia, Jacaranda, Poinciana, and Cassia if desired. Tecoma stans, remove dead and misshapen wood and prune, leaving only a few inches of previous year's growth.

MARCH

" Just now, while the picture of your garden as you would have it is vividly before you, and you realise what effects you would have worked for if you could have seen how things were coming out, sit down with paper and pencil and draw a diagram of the way you want your flowers to look next year. The late winter and early spring blooms are looking you in the face. You see that you needed

CALENDAR FOR THE FLOWER GARDEN

more massing of colour in one place, lower growing plants in another : that you have more yellow and orange than you ought to have, and that you planted certain seeds too close together. If you wait to do this until the flowers have all gone, and you have only your memory to depend on, it will not be easy to visualise the entire garden. Now you can see it, with all its shortcomings as well as all its beauties. Eliminate the mistakes, cultivate the happy combinations of colour and height, and write it all down against planting-out time next year."

BULBS.—Plant Iris and Tuberoses.

CANNAS.—Increase by division or by sowing seed which has been soaked in water for forty-eight hours.

CARNATIONS.—Propagate early in the month by means of layering, selecting shoots from the base of the parent plant. If cuttings are preferred detach with a heel ten centimetres from the base of the parent plant, remove leaves at base, and cut the remainder of leaves half-way back. Set in light sandy soil, and water freely after planting and then moderately. Keep in shade and protect from wind.

CHRYSANTHEMUMS.—Make a final lot of cuttings and place in the shade till set, then remove gradually to a sunnier position, and keep a sharp look out for green-fly.

DAHLIAS.—Sow seed if required.

HOUSE PLANTS.—Overhaul and repot all ferns, palms, etc., incorporating plenty of good manure with fresh soil, being careful not to damage the roots. Window-boxes, tubs, hanging baskets, etc., should receive attention.

GARDENING FOR THE SUB-TROPICS

SHRUBS.—Finish transplanting trees. Manure all shrubberies. Prune established trees, removing all weakly growths and heading back all strong shoots to about half their original length.

STATICE.—Sow seed now.

APRIL

CARNATIONS.—Sever rooted layers from the parent plant, and a week later pot into ten centimetre pots. Examine cuttings and pot those that have begun growth into ten centimetre pots, using a compost of black soil, well-decayed manure, sand, and lime dust.

CHRYSANTHEMUMS.—Gradually move the plants into a summer exposure, and nip off the buds of strong growers.

LAWNS.—Renovate Lippia and Negil. A light top dressing of Nile silt and well-rotted stable manure in equal parts will give vigour to the lawn.

OLEANDER.—Examine in the early morning for caterpillars.

ROSES.—Dust foliage with flowers of sulphur in order to stamp out the spring wave of mildew which will otherwise give rise to a serious attack in the autumn. At the end of the month commence budding, selecting firm shoots that have flowered for the purpose. See that the buds are dormant and well matured. The stocks to be budded must be in a growing condition, and have a smooth stem at the place where the insertion is to be made. The thickness of the stem must not be less than that of a lead pencil. Make the insertion in the stem as low as possible. When irrigating take care not to wet the bud.

STOCKS.—Collect seed as acclimatised variety is more satisfactory than imported. To secure double

CALENDAR FOR THE FLOWER GARDEN

flowers leave a single and a double stock near each other; cut off and destroy the single flowers and seed which have formed: then with a fine brush distribute pollen of double flowers on the single ones as they bloom or shake together.

MAY

BOUGAINVILLEA (red varieties).—Propagate by means of inarching.

CACTI.—Some of the delicate varieties may require shading.

CHRYSANTHEMUMS.—Place the pots in as sunny an exposure as they will stand in order to keep down green-fly, destroying any that appear with Keating's powder or by spraying with soft soap solution. Water just enough to keep from withering.

CREEPERS.—Propagate by layers.

DAHLIAS.—Do not manure until the flower buds appear, otherwise thick foliage chiefly will be produced.

FLOWER BEDS AND BORDERS.—Turn over and air the soil in all empty ones. In old gardens a good dressing of lime is desirable.

INDOOR PLANTS.—Water copiously, applying liquid manure occasionally. Spray with a solution of soft soap and water to check red spider and aphids.

ROSES.—Head back all shoots which have been budded and remove all suckers. Water all old established plants sparingly.

WATERING.—Conserve moisture by watering in the early morning and late evening only.

GARDENING FOR THE SUB-TROPICS

JUNE

ANNUALS.—Sow seed of *Begonia* and *Primula malacoides*.

ANNUAL GRASS.—Dig up and leave ground fallow.

CHRYSANTHEMUMS.—Plants in pots should be sunk in the ground to conserve moisture. Water sparingly, and apply liquid manure weekly. Examine leaves for caterpillars and syringe with soft soap solution.

CINERARIAS.—Towards the end of the month sow seed very thinly in pots, place in sheltered and shady position : water with a fine rose, never allowing the seedlings to become dry as the result is fatal.

GERBERA JAMESONI.—Sow seed, taking care to place it the right side up.

OLEANDERS.—Prune close every second year, and then after pruning paint what remains with soap and petroleum solution, removing same with water after four days. Water well after pruning.

ROSES.—Rest old plants, excepting the dark red varieties, by withholding water. Continue budding operations. Climbers should be attended to now. Remove all dead wood, and don't prune severely.

STANDARDS.—Briars should have one year's growth at least before being budded. All suckers from the base of the plant should be removed, but the side shoots on the main stem left till the buds have matured.

VIOLETS.—Give liberal waterings to those plants from which suckers will be needed, and partially dry off those which are not to be used for propagation.

CALENDAR FOR THE FLOWER GARDEN

JULY

ANNUALS.—Sow for winter flowering, *Alyssum*, *Antirrhinum*, *Delphiniums*, *Dianthus*, *Lobelia*, also *Morning Glory* and *Moon Flower*. Sow thinly to prevent damping off.

CANNAS.—Water copiously.

CHRYSANTHEMUMS.—Plant out in beds, and manure now that the dry heat is over.

CINERARIAS.—Prick out with a lump of soil, being careful not to plant too deeply: if the centre or heart of the plant gets covered decay soon sets in. A little silver sand spread on the surface of the soil will prevent the leaves adhering. Place in partial shade and water sparingly with a fine rose till well established, so that the leaves will not be beaten down and come in contact with damp earth.

ROSES.—Continue withholding water, or water sparingly if in sandy soil.

VIOLETS.—Propagate by layering suckers into small pots. The best method is to half bury the pots in the ground, or if the parent plant is in a pot to arrange the pots so that the tops are all on the same level. The little tufts of leaves on the suckers should be just fixed to the surface of the soil, and they root in quite a short time. The pots may then be removed to make room for others. The plants from the pots can be planted out in October. This is a much safer method than planting rooted suckers from the beds in October, and the return of flowers will be much greater in the spring. Naturally the parent plants should have been well watered and fed to induce them to produce quantities of suckers. As to whether violets do better in pots or in the ground there is not much to choose, provided the plants in the ground can be kept dry during the summer. The violet fields in the south of France are dried off

GARDENING FOR THE SUB-TROPICS

completely, and sheep grazed on them during the summer. In Cairo violets must be given just enough water to keep them alive until September, when regular watering and feeding with phosphates must be resumed.

AUGUST

ANNUALS.—Sow thinly for winter flowering Pansy, Petunia, Phlox, Larkspur, Lobelia, Nemesis, Nicotiana, Salpiglossis, and Stocks, the latter in pots preferably.

CHRYSANTHEMUMS.—Remove all suckers arising from the base of the plants as they tend to weaken the parent. Supports will now be required, tie loosely, water sparingly.

CINERARIAS.—Repot, being careful to place the seedlings or plants in a high position well earthed up. Avoid wetting the leaves when watering. Stand the pots on a bed of cinders in a shady airy situation.

ROSES.—Continue to bud. Withhold water from established plants on black soil, always excepting the red varieties. Transplant budded stocks to permanent position, removing with a big ball of earth in order not to damage the roots.

SEPTEMBER

ANNUALS.—Transfer seedlings into thumb pots. Sow in the ground Anagallis, Larkspur, Linum, Mignonette, Phacelia, and Phlox.

BULBS.—Plant Anemones, Freesias, Ixias, Narcissi, Nerines, etc., placing the bulb twice its own height below the soil, encasing it in sand and resting it on an inch of sand. Never let bulb come in contact with manure.

BOUGAINVILLEAS.—Cut back ruthlessly all long shoots.

CALENDAR FOR THE FLOWER GARDEN

CARNATIONS.—Plant out in beds or repot into fifteen centimetre pots, using similar compost as before. Disbud all but central terminal bud.

CHRYSANTHEMUMS.—Apply liquid manure frequently. Fresh gamouse dung is excellent for the purpose.

CINERARIAS.—Shift into large pots and apply manure, water liberally.

ROSES.—Thin out all dead wood and superfluous shoots. Don't cut off the tops of shoots. Pull off all diseased leaves and remove scale with hard brush dipped in a solution of equal parts of methylated spirit and water. Irrigate and manure. If special fertiliser is required apply recipe as directed for February.

SWEET PEAS.—Sow either in thumb pots or preferably in the ground, previously soaking the seed in water for twenty-four hours as this hastens germination. Telemy varieties and early flowering Spencers are the most satisfactory, as the later flowering kinds suffer from scorch.

VIOLETS.—Resume watering and top dress with superphosphate at the rate of eighty to a hundred grammes per square metre, and sulphate of ammonia thirty to fifty grammes per square metre.

OCTOBER

ANNUALS.—Sow seed of Asters. Remove all the buds from small plants which tend to flower too early.

BULBS.—Plant Gladioli, Iris, and Lilium as previously directed.

CHRYSANTHEMUMS.—Apply liquid manure weekly. If special fertiliser is desired use the following as liquid manure after watering :

Superphosphate	6 parts
Sulphate of ammonia	2 do.
Sulphate of potash	1 do.

GARDENING FOR THE SUB-TROPICS

dissolved in water at the rate of three to four grammes per litre. For green-fly spray with soft soap and petroleum solution.

GERANIUMS.—At the end of the month make cuttings. See directions for February.

GERBERA JAMESONI.—Plant out.

GLOXINIAS.—Obtain large corms and plant in six to eight-inch pots according to size, using fertilising fibre or leaf-mould mixed with a good deal of sand; the corms should not be entirely covered with soil, but only half submerged. Great care must be taken in watering not to wet their crowns. They must be kept in the dark till growth begins, and never allowed to be in a draught; they must be grown indoors in a southern aspect close to a window where they will get plenty of sun.

LAWNS.—Towards the end of the month prepare the land and sow seed of annual grass, one kilo of seed to fifteen square metres of land. Choose a quiet day and water with a fine rose. Where Negil is already established and a fine winter lawn desired, mow the grass closely, then thoroughly scratch the surface with a rake, then sow seed of annual variety, covering the whole with a thin layer of soil and manure. Thus a brilliant green lawn during the cold weather may be obtained, all the while maintaining the roots of Negil which produce new growth in the spring when the annual grass dies down. Thus a permanent lawn is established.

MESEMBRYANTHEMUM.—Propagate by means of cuttings in the open ground.

PELARGONIUMS.—Propagate by means of cuttings. Pelargoniums require less sand and more water than geraniums. They strike and grow more slowly, but they need not be left to dry before planting.

VIOLETS.—Propagate by division if the better plan of layering into pots during summer was not

CALENDAR FOR THE FLOWER GARDEN

followed as directed, and plant out all layers taken in July unless pot culture is preferred.

NOVEMBER

AMARYLLIS.—Dry off by withholding water.

ANTS.—Very many evils in old gardens come from small ants. These industrious brutes multiply until they become a menace to everything. They carry green-fly and mealy bug from plant to plant, the rose scale from climbing and other roses to neighbouring bushes. They are cowherds, and live on the milk of the creatures they rear. Their destruction is essential. Go to the ant, thou gardener, and defeat her ways with petroleum and boiling water. W. W.

ASTERS.—Sow seed now.

CANNAS.—Lift, leaving the main stalk to dry before cutting. Store in a dry place.

CINERARIAS.—Apply liquid manure after watering.

DAHLIAS.—Cut back when all growth is finished. Provided the tubers are so situated that water can be withheld till spring, they may remain in the ground, otherwise they must be lifted, packed in sand and stored in a cool place. The variety *D. imperialis* should not be lifted. Look out for seeds and collect before they rot.

GERANIUMS AND PELARGONIUMS.—Prune and make cuttings.

GERBERA JAMESONI.—Water sparingly during the winter.

LAWNS.—Cut and roll regularly. If grass is allowed to grow too long it has a brownish appearance after mowing and is weakened.

ROSES.—With the cooler nights mildew is prevalent. Water sparingly, and in the early morning

GARDENING FOR THE SUB-TROPICS

when the foliage is wet with dew, dust with flowers of sulphur.

STOCKS.—Examine for caterpillars.

SWEET PEAS.—Manure and see that sticks are provided when required. Allow one central stem to develop and take away all side shoots.

DECEMBER

ANNUALS.—For young plants use as top dressing Nile earth, not manure, as the latter is too heating.

AMARYLLIS.—Continue to withhold water.

ARUM LILIES.—Lift, divide, and transplant if desired. Dig in manure around old clumps.

CACTI.—Withhold water in order to induce the plants to flower.

CHRYSANTHEMUMS.—Cut down plants which have finished blooming and remove roots with a ball of earth. Transplant to a convenient place, leaving the beds and borders empty for the next occupant.

ROSES.—Obtain briars (*Rosa Canina Egyptica*) and make cuttings as stock for budding later. Select cuttings from well-ripened wood of medium size, and cut into lengths of about twenty centimetres. Make the bottom cut with a sharp knife just below a bud. Remember to remove all the buds with the exception of the top two in order that the plants do not throw up suckers in future. Place the cuttings on ridges at a distance of thirty to fifty centimetres apart, and allow only five centimetres to show above the soil. Keep the cuttings well watered.

Hose and spray old plants to keep down spiders which carry mildew. If the disease is prevalent do not irrigate but spray only. Search for rose beetle in the early morning. If special stimulants

CALENDAR FOR THE FLOWER GARDEN

are required during the flowering season apply as liquid manure after watering

Nitrate of potash 1 part
Phosphate of potash 1 do.

dissolved in water at the rate of ten grammes per litre.

SWEET PEAS.—Spray frequently with water, and do not allow seed to form.

A CALENDAR FOR THE VEGETABLE GARDEN

JANUARY

ASPARAGUS.—Transplant young plants from seed bed to their permanent positions. Towards the end of the month established plantations should receive their annual covering of stable manure. Remove the soil very carefully from the crowns, then recover them with a thick layer of horse manure mixed with straw, and cover the whole with the soil previously removed from the crowns. Withhold water till the end of March. Irrigate once a month during the summer.

AUBERGINES.—The crop which was transplanted late in July or August must be kept dry during this month.

BEANS.—The first crop of French beans may be sown in a warm sheltered position towards the end of the month. Arrange the land in ridges running east and west, then sow on the southern side only. This ensures good germination. Successive sowings should be made every three weeks until the end of March. The above treatment does not apply to the later sown crops.

BEETROOT AND CARROTS.—Sow now for the summer supply. The preparation of seed beds should be carefully considered. Dig the land thoroughly, then sow the seed in narrow beds not more than forty centimetres in width. The latter

CALENDAR FOR VEGETABLE GARDEN

is important as the seeds germinate more readily if the water is evenly distributed.

CELERY.—Sow seed towards the end of the month for provision of seedlings in July and August.

JEWS MALLOW AND PURSLANE.—Commence sowing these towards the end of the month. They must be carefully sheltered until the seed has germinated.

KOHLRABI.—Transfer young plants to ridges and continue to make sowings so as to keep up a continual supply.

LEEKS.—Sow seed of European leek towards the end of the month.

LETTUCE AND ENDIVE.—Continue to sow seeds of these in narrow beds, the seedlings being thinned when large enough.

PEPPERS.—Treat the same as aubergines.

POTATOES.—In the interior the spring crop may be planted after the middle of the month, and should not be delayed after the end of January. See that the tubers have commenced to sprout before planting. Select well-shaped small tubers with good eyes.

RADISHES.—Sow small quantities every ten days.

SPINACH.—A crop of European spinach may be sown now. The variety known as "Viroflay" is suitable.

TURNIPS.—Sow seed for the last crop towards the end of the month.

FEBRUARY

ASPARAGUS.—Withhold water.

AUBERGINES.—Plant out seedlings which were sown last October. If young plants are not avail-

GARDENING FOR THE SUB-TROPICS

able, sow seed now. Prune, manure, and water plants of old crop as this induces them to start new growth after being kept dry during the past two months.

BEANS.—Make another sowing, using the ever-green variety as it is the best for summer. For the use of the pods in a green state the beledi variety will be found more suitable. For the use of dried seed, it is better to sow the Azmirly kind.

CAPE GOOSEBERRY.—Towards the end of the month sow seed in beds or pans in fine soil.

CUCURBITACEOUS CROPS.—An early sowing of cucumbers, vegetable marrows, melons, pumpkins, etc., may be made now. It is always advisable to have the seed germinated before planting. This is done by soaking it in water for twelve hours, afterwards placing seed in a moist rag and burying it under the surface of a warm manure heap or wrapped in green berseem.

KOHLRABI.—Make successive sowings.

MUSTARD AND CRESS.—Sow from time to time in prepared boxes, and water by hand with clean water.

OKRA OR BAMIA.—Commence to sow this crop on ridges. Germinate the seed as suggested for cucumber, etc.

ONIONS.—Transplant those sown in September. Plant last year's bulbs for the production of seed, cutting off the top half of each bulb before planting.

SPINACH.—A crop of summer spinach should now be sown. There are three kinds which support heat with impunity. These are Mountain Spinach, New Zealand, and Indian.

SWEET HERBS.—Propagate by means of cuttings Southernwood, Majoram, and Rosemary. In-

CALENDAR FOR VEGETABLE GARDEN

crease by division of old plants, Tarragon, Tansy, and Mint. Sow seeds in pots of Sage, Lavender, and Thyme.

TOMATOES.—Young plants raised from seed in autumn should now be planted out.

MARCH

ASPARAGUS.—Continue to withhold water. Sow seed for provision of young plants next January. Seed must be taken from strong plants which produce thick shoots.

AUBERGINES.—Transplant autumn sown seedlings if not already completed.

CAPE GOOSEBERRY.—Transfer seedlings from bed or pan to open ground. Do not water or manure heavily.

COLOCASIA.—Commence planting this crop now.

CUCURBITACEOUS CROPS.—Though an early sowing was recommended in February, the main crops should be planted now with due regard to the directions given for the germination of seeds.

JERUSALEM ARTICHOKEs.—Planting of tubers should be undertaken now.

LETTUCE AND ENDIVE.—Continue sowing seed in partially shady positions.

SPINACH.—Sowings of summer varieties as previously directed may be made.

SWEET POTATOES.—Plant cuttings as soon as they can be obtained. There are various kinds differing from one another in the degree of sweetness of the roots.

APHIS.—Keep a sharp look out for the appearance of aphid on the flower stems of radishes, cabbages, cauliflowers, turnips, etc., if seed is

GARDENING FOR THE SUB-TROPICS

required. The most simple remedy is a spray fluid of soft soap and water in the proportion six kilogrammes of soap to a hundred litres of water. Mix the soap first with twenty litres of boiling water, then add cold water afterwards to make up the hundred litres.

APRIL

ARTICHOKES.—The Globe artichokes have now ceased bearing, and should be kept dry until the time of transplanting arrives in July or August. The Jerusalem artichokes should be planted now. There are two varieties, one with red tubers and one with white. The latter are the better.

AUBERGINES.—Sow seed now and transplant young seedlings as required.

BEANS.—Make a sowing of French beans or Haricots once in every three weeks as this is the length of bearing of the plants. During the bearing the crop must be watered every four to seven days according to the nature of the land.

BRUSSELS SPROUTS, CABBAGES, AND CAULIFLOWERS.—Sow seeds of early crops in drills forty centimetres apart in narrow beds as this facilitates hoeing and weeding between the plants. After the seed has germinated the watering is regulated so as to prevent the seedlings becoming long and weak before the time of transplanting arrives.

COLOCASIA.—Plant offsets of Kulkas or Egyptian Arum now. This crop is worthy of more extensive cultivation in gardens. It requires an abundance of manure.

CUCURBITACEOUS CROPS.—Take the precaution of dusting the leaves of cucumbers, melons, and vegetable marrows with sulphur to prevent attacks of mildew. Sow vegetable marrow once in five

CALENDAR FOR VEGETABLE GARDEN

weeks, the best variety for this country being Eskandarani. Sow pumpkins if not already done.

PEPPERS.—Transplant seedlings of sweet and hot peppers as required.

SWEET POTATOES.—Plant as soon as cuttings are available. Apart from the beledi and Eskandarani varieties the Ministry of Agriculture has introduced several varieties from the United States which are more productive than the local kinds.

MAY

AUBERGINES.—Last year's plantings are now bearing. If the young seedlings have not been planted they should be put in at once; as soon as they are ready for use the old plants are pulled up.

BRUSSELS SPROUTS, CABBAGES, AND CAULIFLOWERS.—See directions for April.

FRENCH BEANS.—Make repeated sowings every three weeks in order to maintain a constant supply. Keep the land moist when the plants come into bearing.

JEWS MALLOW.—Sow seed if required.

MUSTARD AND CRESS.—Sow seed in boxes or beds in partial shade, and water with clean water from a watering-can.

RADISHES.—Make a sowing every ten days in order to maintain a constant supply of tender roots.

ROCKET.—Enrich the land with well-decayed manure, then sow seed of this most excellent summer salad plant.

SPINACH PLANTS.—Sow any of the following at the present time: Small-leaved Chard-beet, Indian, Mountain or New Zealand spinach.

STRAWBERRIES.—A dressing of nitrate of soda at the rate of eighty kilos per feddan will prove most beneficial.

GARDENING FOR THE SUB-TROPICS

VEGETABLE MARROW.—Make a sowing once in six weeks. Only the bush or short stemmed varieties should be grown in private gardens. Dust the leaves with sulphur in order to prevent attacks of mildew.

JUNE

All summer crops of vegetable are now growing and bearing, and in respect to these the work throughout the summer consists of re-sowing at necessary intervals of time in order to obtain a continuous production. Those who leave their winter homes for the summer holidays should make arrangements for crops to be planted for bearing in the autumn. The summer holidays afford an excellent opportunity for the general manuring of the vegetable garden. More land is vacant now than at any other time, and the opportunity should not be lost of mixing the soil with a heavy dressing of farmyard manure. As far as can be done with the available labour, the land should also be trenched. The cultivator who prepares his land now in the manner described above will certainly have a better chance of success than the one who waits until the planting season arrives.

A sharp look out should be kept for the appearance of the cotton-worm in the garden. The gardener should be trained to recognise the egg masses on the leaves, and to pick them off before the eggs hatch.

CABBAGES AND CAULIFLOWERS.—An early crop of these may be planted towards the end of the month.

TOMATOES.—Sow seed in the latter half of the month for the provision of seedlings for the autumn crop.

CALENDAR FOR VEGETABLE GARDEN

JULY

AUBERGINES.—Sow seed of the long aubergines for planting out in August. This crop bears better late in the year than exhausted plants which were planted at the beginning of the summer. The young plants are also more suitable for keeping throughout the winter for the production of an early crop next summer.

BLACK-EYED BEANS OR LUBIA.—Sow seed of these now. If dry seed is required the variety known as Azmirly is the best.

BRUSSELS SPROUT, CABBAGE, AND CAULIFLOWER.—Transplant seedlings as soon as possible. The early crops are always best, the late crops are usually inedible on account of the aphides which infest them.

CELERY.—Transplant young seedlings from the seed bed to their permanent positions. Sow seed for the supply of leaves for soup, but not for the production of large heads.

CUCUMBERS.—Sow a fresh crop now.

OKRO.—Make a sowing of hamia now to replace the exhausted summer plants for autumn bearing.

RADISHES.—Sow now if required.

TOMATOES.—A crop of tomatoes may now be planted, and seed sown for the provision of plants for later crops.

VEGETABLE MARROW. Sow seed if desired.

AUGUST

ARTICHOKES.—Plant Globe artichokes this month. If the old plants have been kept quite dry during the last three months they will be in

GARDENING FOR THE SUB-TROPICS

good condition for transplanting. Take care not to divide them too much, and thus make the sets too small with the result that they may die. Another important point is that of watering lightly when the crop is first planted. If the land is kept too wet at this stage the sets decay before they have time to start into growth.

AUBERGINES.—Transplant seedlings which were sown last month.

BEETROOT AND CARROT.—Make sowings of these now if required.

BRUSSELS SPROUTS.—Transplant seedlings as soon as possible, as the early crops are always the best.

CABBAGE AND CAULIFLOWER.—Sow seed of these now for the supply of young plants later. Seedlings of early crops should now be planted out.

LETTUCE.—Sow seed of cabbage lettuce to provide small plants without transplanting. All kinds of lettuce may be sown late in August and September for transplanting later.

ONIONS.—Plant small bulbs, known as biz, which were saved from last year's crop. If the former are not available use large onions cut horizontally into halves. These are known as Meawar.

PARSLEY.—Plain leaved parsley may be sown now if required.

RADISHES AND ROCKET.—With the aid of plenty of manure and water these salad crops may be sown and grown at any time during the next three months.

SPINACH.—Commence sowing winter spinach.

STRAWBERRIES.—Propagate now by division of the old clumps. It is necessary to see that the

CALENDAR FOR VEGETABLE GARDEN

sets are not too small. They require an abundance of water when first planted. In preparing the divisions for planting, cut off the leaves and trim the roots. Then place in ridges eighty centimetres wide at a distance of twenty centimetres apart.

TOMATOES.—Plant a crop of these for fruiting towards the end of the year.

TURNIPS.—Commence sowing now. Take the precaution of shading the seed bed.

VEGETABLE MARROW.—Continue sowing seed if required.

SEPTEMBER

AUBERGINES.—These may still be planted for bearing late this year and for next year's crop. This, however, must be done at once.

BEETROOT AND CARROTS.—Sow now if required.

BROAD BEANS.—The first crops of these may be sown at any time now.

CABBAGES AND CAULIFLOWERS.—Transplant seedlings of these and sow seed for production of young plants later.

CELERY.—Transplant celery sown earlier in the year. Sow seed to provide leaves for soup.

FRENCH BEANS.—Continue making sowings to keep up supply of green pods.

MUSTARD AND CRESS.—Sow as usual.

PARSLEY.—Both plain and curled leaved varieties may be sown now.

PEAS.—During the present month make the first sowing of peas. Sow in pockets twenty centimetres apart on the sides of furrows. For short varieties such as Duke of Albany place at a distance of ninety centimetres apart. Sow the seed

GARDENING FOR THE SUB-TROPICS

on one side of the furrow only. As the dwarf varieties do not require staking they are less troublesome to cultivate.

RADISHES.—Sow as usual.

SPINACH.—Sow if required.

STRAWBERRIES.—See directions for August.

TOMATOES.—Sow seed for transplanting later.

TURNIPS.—Sow if required.

VEGETABLE MARROW.—Make late sowing now.

OCTOBER

ARTICHOKES (globe).—The sets of artichokes which were planted in August have now become established, and may be watered freely. The constant use of the fan is most beneficial at this stage.

AUBERGINES.—Towards the end of the month sow seeds in a sheltered position as seedlings must be protected from frost during the winter.

BEETROOT AND CARROTS.—Make a sowing of these once each month in order to maintain a continuous supply of young tender roots.

BROAD BEANS.—Continue to sow seed if required.

CAPE GOOSEBERRY.—Sow seed in fine soil in beds or pans.

CELERY.—Sow seed for supply of leaves for soup. Transplant seedlings for the production of large plants.

CORIANDER, CHERVIL, DILL, and EGYPTIAN MALLOW.—Sow these seeds during this month.

LETTUCE.—Make sowings now and transplant earlier ones.

MUSTARD AND CRESS.—Sow as usual.

CALENDAR FOR VEGETABLE GARDEN

PARSNIPS.—Lose no time in sowing seed to ensure sufficient time for the roots to mature before the hot weather sets in.

PEAS.—Both dwarf and tall varieties may be sown this month in soil trenched at least three feet deep, taking care to put the bottom earth back where it came from.

PEPPERS.—Apply same treatment as directed for aubergines.

POTATOES.—Continue to plant tubers in seaside districts.

SPINACH.—Sow now if required.

STRAWBERRIES.—Water freely, and do not spare the hoe.

TOMATOES.—Transplant seedlings for bearing in the spring.

TURNIP.—Sow now if required.

NOVEMBER

AUBERGINES.—Sow in a warm place for planting out in February or March. The seedlings must be covered with palm leaves or mats or, if possible, glass frames.

BEETROOT.—Continue sowing if desired.

CABBAGE.—Sow seed of Drumhead cabbage, and transplant seedlings of previous sowings.

CARROTS.—Sow to keep up a constant supply of tender roots in very loose earth to prevent forking.

CAULIFLOWER.—Transplant seedlings for the production of late crops.

KOHLRABI.—Sow seed as required, and transplant to ridges when the seedlings are sufficiently large. This vegetable soon becomes stringy, so must be grown quickly on rich land.

GARDENING FOR THE SUB-TROPICS

LETTUCE.—Transplant seedlings, and make new sowings of seed in beds where it will remain, the seedlings being thinned out when large enough. If late sown crops are transplanted they run to seed before the plants are large enough for use.

PEAS.—Sow if a late crop is desired.

RADISHES.—Make repeated sowings of turnip-rooted radishes every ten days in order to maintain a supply of tender roots.

SPINACH.—Sow seed if required.

TOMATOES.—A crop should now be planted for fruiting in April. When established young plants must be sheltered with maize stalks to protect them from the cold until all danger of winter frost is passed.

TURNIP.—Sow crop of white turnip if required.

DECEMBER

AUBERGINES.—Provide shelter for the seedlings from the cold. Keep the seedlings dry during this month as the seedlings are liable to damp off if kept too wet.

BEETROOT.—Sow if required.

CABBAGE AND CAULIFLOWER.—Transplant seedlings of these for production of late crops.

CARROTS.—Sow as often as necessary in order to maintain a continuous supply of young tender roots.

KOHLRABI.—Sow seed and transplant seedlings as often as required.

LETTUCE.—Sow seed of cabbage lettuce in beds. The seedlings will be thinned when large enough, but they must not be transplanted.

CALENDAR FOR VEGETABLE GARDEN

ONIONS.—Transplant onions which were sown in August.

PEAS.—Dwarf or quickly maturing peas may still be sown.

POTATOES.—These can be planted during the present month in seaside districts. It is risky to do so in the interior.

ROCKET.—This useful salad may still be sown. To grow it well the land must be very rich.

SPINACH.—Sow a crop if required.

TOMATOES.—Plants which are already growing must be properly sheltered with maize stalks until all danger from frost is past.

TURNIPS.—Sow a crop of white turnip if desired.

A SHORT VOCABULARY OF ARABIC GARDENING TERMS

ENGLISH	ARABIC
Annual	Sanâwy
Apple	Tofâh
Apricot	Mishmish
Arch	*Qântara
Arrangement	Tartib
Axe	Balta
Banana	Môz
Basket	Sabat
Bass	Halfa
Bed (flower)	Gabbalâia
Black	Iswid f. sôda
Blight	Nadwa
Blue	*Azraq f. zarqa
Blue (dark)	Kohly
Blue (pale)	Labany
Bonfire	*Hariqa
Border	Dair
Box (case)	Sandûk
Break (imp.)	Eksar
Bucket	Gardal
Bud (imp.)	Zirr
Bulbs	Bassal
Burn (imp.)	*Ehriq
Carnation	*Qoronfel
Cart	Carro
Case	See Box
Cat	*Qotta
Caterpillar	Dûda
Chain	Silsila
Chrysanthemum	Araûla
Cinders	Rumâd
Clean	Nadif
Cold (m.)	Bard
Cold (adj.)	Bardân or Barid
Cut (imp.)	*Eqta
Cuttings	*Awqal

¹ In Alexandria pronounce q like a hard g ; in Cairo do not pronounce it at all.

A SHORT VOCABULARY OF

ENGLISH	ARABIC
Daisies	Mandaliya
Dark	*Ghamiq
Date	Bela
Depth	*Umq
Dig (imp.)	Ahfâr
Do (imp.)	Ermel
Double	Megwiz
Fast	*Sharqy
Eucalyptus	Kafûr
Fetch (imp.)	Gîb
Flower	Zahr, pl. Zuhur or Azhar
Fork	Shôka
Gaillardia	Amr
Garden	Geneyna
Gardener	Genainy
Gate	Bâb
Geranium	Gurunia
Grapes	Anab
Grass (lawn)	Gazoo
Gravel	Haswa
Green-fly	See Blight
Hammer	Shakûsh
Hatchet	See Axe
Hedge	Zariba
Heat	Harâra
Heavy	*Taql
Height	Uloo
High	Aâly
Hose	Khartum
House	Bevt
Hurry (imp.)	Estâgill
Island	Gezira
Important	Muhem
Inside	Gûa
Key	Maftah, pl. Mafâtih
Knife	Sekkina
Ladder	Sellem
Large	Kabir
Length	Tûl
Light	Nûr
Light adj. (in weight)	Khaff
Light adj. (in colour)	Fâtih
Lock	*Qifta
Locust	Garâda
Long	Tawil
Low	Wâtzy

ARABIC GARDENING TERMS

ENGLISH	ARABIC
Make	See Do
Manure (stable)	Sabla
Mat	Hassira
Mowing-machine	Makana
Nail	Musmar, pl. Masâmir
Necessary	Lâzem
Nasturtium	Abu Khangar
New	Gedid
Nile mud	Tin
North	Bahry
Old	*Qadim
Orange	*Portoqân
Order	Tanzim
Padlock	See Lock
Pan	Magûra
Paraffin	Gaz
Path	*Tariq
Peach	Khûch
Pear	Commetra
Peas	Bacilla
Perennial	Dâm
Petrol	See Paraffin
Petrol-tin	Safiha
Pickaxe	Fâs
Pink	Bamby
Pit	Hufra
Plum	*Barqûq
Poinsettia	*Bint et qonsul
Pomegranate	Rummân
Pond	*Birqa
Pool	See Pond
Poppy	Abu en nôm
Pot	*Qasria, pl. Qasâri
Price	Taman
Prune	*Taqlim
Put (imp.)	Waddy, Hutt
Railing	Darabzin
Rake	Garâfa
Red	Ahmar, fem. Hamra
Road	Sikka
Roller	Mahdal or Hagggar (stone)
Rope	Habl
Rose	Warda, pl. Ward
Rose (water-can)	Marasha
Round (adj.)	Muddawar
Rubbish	Afsh

A SHORT VOCABULARY OF

ENGLISH	ARABIC
Salt	Malh
Sand	Raml
Saw	Minshâr
Seed	Bezra
Scissors	*Maqâs
Shade	Dell
Shrub	Shaggar
Short	*Qussâyar
Single	Mefrid
Small	Sughâyar
Soil	Ard
Soap	Sabun
Soot	Sawad
South	*Qibly
Square	Murabba
Stake	Marîna
Steps	See Ladder
Sticks (cane)	Assâya
Stocks	Mantûr
Stone	Haggar
Straight	Dûghry
Strawberries	Frawla
String	Dubâra
Strong	Gâmed
Summer	Seyf
Summer-house	Kushk
Sunshine	Shems
Syringe	*Huqna
Take up (imp.)	Shil
Tangerine	Yussef Effendi
Thick	Tekhin
Thin (slender)	Rutâya
Thin out (imp.)	*Qallal
Throw, scatter (imp.)	Êmi
Tie up (imp.)	Erbot
Tidy (adj.)	Muntazam
Tobacco	Dokhân
Tobacco juice	Mâ ed Dokhan
Tomato	Oota
Tree	Shagar, pl. Ashgar
Trowel	Mastarîn
Tub	Barmil, pl. Barâmil
Tweezers	Kammâsh
Violet	Banafsega, pl. Banafaeg
Violet (colour)	Banafsegy
Wall	rieyta
Water	Mâ, Môya
Water-can	*Kanaka, ibriq
Weeds	Hashish

ARABIC GARDENING TERMS

ENGLISH	ARABIC
West	Gharby
Wheelbarrow	Carro el Yid
White	Abiad, fem. Bayda
Wide	Arid
Width	Urd
Wind	Hawa
Winter	Sheyta
Wire	Silk
Worm	See Caterpillar
Work	Shoghl
Work (imp.)	Estaghal
Yellow	Asfar, fem. Safra

BIBLIOGRAPHY

FOR INFORMATION ON THE STRUCTURAL SIDE OF GARDEN MAKING :

- " Art and Craft of Garden Making," Thos. Mawson.
- " Art and Practice of Landscape Gardening," Milner.
- " Garden Design," M. Agar.

GARDEN MAKING FROM THE ARTISTIC STANDPOINT :

- " Wood and Garden," Miss G. Jekyll.
- " Colour in the Flower Garden," Miss G. Jekyll.
- " Gardens Old and New," The Studio Press.

INSTRUCTIONS IN GARDENING :

- " Manual of Gardening," Bailey.
- " The Unheated Greenhouse," Davidson.
(This describes many of the plants grown out of doors in the Sub-Tropics.)
- " Gardening for Amateurs in India," W. W. Johnstone.
- " Gardening in the Tropics," Marshall Woodrow.

THE SCIENTIFIC SIDE OF GARDENING :

- " Chemistry of the Garden," Cousins.
- " Plant Physiology," Sorauer.

INDEX

- Abutilon, 79
 Acacia nilotica, 87
 Acalyphas, 79
 Adiantum (Maidenhair fern), 71
 Agapanthus umbellatus, 75
 Agathæa cœlestis, 71
 Ageratum, 64
 Agrostemma cœli-rosea, 71
 Allamanda hendersoni, 89
 Alonsoa Warscewiczii, 66
 Alyssum maritimum, 68
 Amaryllis, 75, 150, 171, 172
 Ammonia, sulphate of, 54
 Anagallis grandiflora, 64
 Anchusa capensis, 65
 — italica, 71
 Animal manure, 55
 Annuals, Blue, 64, 65, 66; Crimson, Scarlet, Pink, 66, 67; Yellow and Orange, 68; White, 68, 69; Miscellaneous, 69, 70, 71; Instructions *re* Annuals, January, 159; February, 161; March, 162; April, 164; May, 165; June, 166; July, 167; August, 168; September, 168; October, 169; November, 171; December, 172
 Annuals, chemical fertilisers for, 56
 Antigonon (coral creeper), 89, 160
 Antirrhinum, 66
 Ants, destruction of, 59, 171
 Aphis, remedy for, 177
 Aquatic plants, 31
 Aralia papyrifera, 79
 Arctotis grandis, 69
 Artichokes, globe, 178, 181, 184
 Artichokes, Jerusalem, 177, 178
 Artocarpus incisa (Bread fruit), 89
 Arum Lily, 172
 Arundinaria japonica, 79
 Asparagus, 174, 175, 177
 Asparagus plumosa, 89
 — Sprengeri, 89
 Aspidistra, 72
 Aster, 171
 Aubergine, 174, 175, 177, 178, 179, 182, 183, 184, 185, 186
 Bambusa, 79
 Bauhinia (camel foot), 85
 Beans, Black-eyed (or Lubia), 181
 —, Broad, 183, 184
 —, French, 174, 176, 178, 179, 183
 Beaumontia, 89
 Bedding out of plants, 28, 29
 Beetles (Rose), destruction of, 59
 Beetroot, 174, 182, 183, 184, 185, 186
 Begonia gracilis, 75
 — luminosa, 75
 Bignonia, 90
 Black fly, destruction of, 60
 Borders, planning of, 22
 Bougainvillea, 90
 —, different varieties of, 117-119
 —, instructions for growing, 119
 —, inarching of, 165
 Brussels Sprouts, 178, 181, 182
 Bulbs, planting of, 113-116, 160, 163, 169

INDEX

- Bulbs grown in water, 115
 Budding of plants, 41, 42
 — of roses, 99
 Buddleia Americana, 79
 Burgundy mixture, 63
 Butea frondosa, 86

 Cactus, 80, 160, 165, 172
 Cæsalpinia Gilliesii, 80
 Cabbage, 178, 179, 180, 181,
 183, 185, 186
 Calla Æthiopica (Richardia
 or Arum lily), 75
 Calliopsis (Coreopsis), 68
 Callistemon, 80
 Canary creeper, 68
 Candytuft, 66
 Canna (Indian shot), 75, 163,
 167, 171
 Cape Gooseberry, 176, 177,
 184
 Carnation, 72, 160, 161, 163,
 164
 Carnations, chemical fertil-
 isers for, 57, 161
 Carrot, 174, 183, 185, 186
 Cassia eromophylla, 80
 — fistular, 88
 Casuarinas (she oak), 88
 Caterpillars, destruction of,
 59
 Cauliflower, 178, 179, 181,
 182, 183, 185, 186
 Celery, 175, 181, 183, 184
 Cestrum, 80
 Chemical fertilisers, 56, 57
 Chervil, 184
 Chrysanthemum, 72, 160, 165,
 166, 168, 172
 —, planting out, 120, 121,
 122, 167
 —, disbudding of, 122-127,
 162, 163, 164
 —, A selection of, 128
 Chrysanthemums, chemical
 fertilisers for, 57, 169
 Cineraria, 65, 160, 166, 167,
 171
 Citharexylum quadrangulare
 (fiddle wood), 86
 Clematis flammula, 90
 Clerodendron fallax, 81
 — scandens, 90, 94

 Climbers, Perennial, 89-95,
 162
 Clitoria ternatea, 91
 Coal-ashes, as manure, 56
 Colocasia, 177, 178
 Colour effects, 20, 21, 22, 27,
 28
 Coriander, 184
 Cosmea, 68
 Creepers, 160, 165
 Cucumber, 181
 Cucurbitaceous crops, 176,
 177, 178
 Cuphea eminens, 81
 Cut flowers, stimulation of,
 140, 150
 —, reviving drooping, 150
 Cuttings, 37, 38, 39
 — by American method, 39,
 40
 Cypress Lawsoniana, 86
 Cytisus albus, 81

 Dædalacanthus nervosus, 81
 Dahlias, 162, 163, 165, 171
 Damping off, symptoms of,
 145
 —, cause of, 145, 146
 —, prevention and remedy
 of, 146-148
 Datura, 81
 Delphinium, 65
 Dendrocalamas gigantea, 81
 Dianthus, 67
 Dill, 184
 Dimorphoteca aurantiaca, 68
 Division, of plants, 46
 Dinging, 50, 51, 52
 Duranta Plumieri, 94

 Echium, 81
 Egyptian mallow, 184
 Endive, 175, 177
 Erythrina crista-galli, 86
 — indica, 88
 Eschscholtzia, 68
 Eucalyptus, 88
 Euphorbia, 81

 Ferns suitable for growing
 indoors, 139, 140
 Fertilisers, 51, 52
 —, chemical, 56, 57

GARDENING FOR THE SUB-TROPICS

- Ficus** (rubber tree), 87
Freesia, 76
 — flowering at Christmas, 116
Fungoid pests, 61, 62, 63
Garden, construction of, 18, 19
 —, directions for laying out, 17, 18
 —, planting of, 19, 20
 —, upkeep of, 32, 33
Gardener, 33
Gaura Lindheimeri, 68
Genista Hispanica, 82
Geranium, 72, 162, 170, 171
 —, dates for taking cuttings of, 129, 130
 —, method of planting, 130-132
 —, bedding out, 132-134
Gerbera Jamesoni, 72, 166, 170, 171
Ginger, 76
Gladiolas, 76
Gloxinia, 76, 170
Godetia, 67
Grafting, 42, 43
Green-fly, destruction of, 60
Gyneryum argenteum (Pampas Grass), 82
Gypsophila elegans, 69
Hedges, Exterior, 94, 95
 —, Interior, 95
Heliotrope, 72
Hibiscus, 82
Hoeing of roses, 105
Hollyhock, 67
Hoya carnosa, 91
Hyacinth, 76
Inarching of plants, 44, 45, 46
Indoor plants, 138-141, 163, 165
Insect pests, destruction of, 58, 59, 60
Ipomœa (Convolvulus), 65, 91
Iris, 76
Jacarandea mimosœfolia, 86
Jasmine arabis, 82
 — azoricum, 91
 — grandiflorum, 91
 — simplifolium, 91
Jews mallow, 175, 179
Kennedya (Hardenbergia), 91
 — comptoniana, 91
 — monophylla, 91
Kohlrabi, 175, 176, 185, 186
Lantana camera, 95
 — delicatissima, 82
Larkspur, 67
Lavendula abbotanoides, 73
Lawns, 22, 23, 24, 160, 164, 170, 171
Layering, 40, 41
Lebbek (Albizzia lebbek), 88
Leek, 175
Lettuce, 175, 177, 182, 184, 186
Lilium auratum, 113
 — candidum, 113
 — gloriosa superba, 114
 — longiflorum, 76
Lime, as manure, 56
Liming, 50
Linum flavum, 82
Lobelia, 65
Lonicera (Honeysuckle), 92
Magnolia, 92
Manure, animal, 55
 —, liquid, 55
 —, storage of, 51
Manures, relative values of animal, 51
Marguerite, 73
Maurandya Barclayana, 92
Mealy bug, destruction of, 60
Melaleuca ericifolia, 83
Melanthus major (honey flower), 83
Mesembryanthemum, 73, 170
Mignonette, 69
Mildew, treatment of, 61, 62
Mole cricket, destruction of, 60
Murraya exotica, 95
Mustard and cress, 179, 183, 184
Myosotis, 65

INDEX

- Myrtle, 95
- Nandina domestica, 83
- Narcissi (daffodils and jonquils), 77
- Nasturtium, 69
- Nemesia stromosa Suttoni, 68
- Nemophila insignis, 65
- Nepeta Mussini (Catmint), 73
- Nerine, 77
- Nicotiana affinis, 69
- Nigella damascena, 66
- Night-scented stock, 69
- Nitrate, 53
- Okro, 181
- Oleander (Nerium), 83, 164, 166
- Onion, 182, 187
- Oxalis floribunda, 77
- Pancratium maritimum (Sea Daffodil), 113
- Pansy, 65
- Parkinsonia, 86
- Parsley, 182, 183
- Passiflora (passion flower), 92
- quadrangularis, 92
- Peas, 183, 185, 186, 187
- Pelargoniums, dates for taking cuttings of, 129, 130, 170, 171
- , method of planting, 130-132
- , bedding out, 132-134
- Pentstemon, 73, 160
- Pepper, 175, 179, 185
- Perennial climbers, 89-95
- Perennials, 71-75
- Perfume, home-made, 154
- , still, 154
- , how to make violet, 155, 156
- Pergolas, 17, 19, 25
- , climbers suitable for covering, 89-93
- Petunia, 70, 160
- Phacelia campanularia, 66
- Phlomis fruticosa (Jerusalem sage), 83
- Phlox Drummondii, 67
- Phosphate, 52, 53
- Phyllanthus, 83
- Phyllostachys, 83
- Pittosporum, 93
- Plants with bulbs and tubers, 75-78
- Plumbago capensis, 84, 92
- micrantha, 84, 92
- Poinciana regis (Gold Mohur), 87
- Portulaca, 70
- Pot plants, chemical fertilisers for, 57
- Potash, 52
- , nitrate of, 54
- , phosphate of, 53
- Potato, 175, 185, 187
- Potpourri, directions for making, 151-153
- Poudrette, 56
- Primula malacoides, 70
- Pruning of roses, 101
- Purslane, 175
- Radish, 175, 181, 182, 184, 186
- Ranunculus, 77
- Red ants, destruction of, 59
- Red spider, destruction of, 60
- Rhynchospermum jasminoides, 93
- Ricinus (castor-oil plant), 84
- Ringling, 40, 41
- Rock gardens, 29, 30
- Rocket, 179, 182, 187
- Roof garden, planting of, 142, 143
- , watering of, 143
- , suitable plants for, 143, 144
- Rosa bracteata (wild rose), 95
- Rose garden, 25, 26, 27
- , a Beledi, 110
- Rose Notes, January, 99, 100, 160; February, 101, 104, 162; March, 104, 106; April, 106, 108, 164; May, 108, 109, 165; June, 166; July, 167; August, 168; September, 169; November, 171; December, 172
- Rose scale, destruction of, 60
- Rosemary, 95

GARDENING FOR THE SUB-TROPICS

- Roses, chemical fertilisers for, 57, 162, 173
 Rubbish pit, 25
 Russelia juncea, 84
 Rust, treatment of, 62
 Sachet powders, to make, 156
 Salix babylonica (weeping willow), 87
 Salpiglossis, 70
 Salvia farinacea, 74
 Santolina incana, 84, 160
 Saponaria calabrica, 67
 Sausage Tree (*Kigelia pinata*), 88
 Scabiosa caucasica, 66
 Schinus molle (weeping pepper), 87
 — terebinthifolius (red pepper), 95
 Seats, garden, 25
 Seeds, 35
 — sown in pans, 35, 36
 — sown in the ground, 37
 Senecio cinerariæfolia, 84
 Shrubberies, planning of, 21
 Shrubs, 161, 162, 164
 Smilax (*Medeola*), 93
 Soap-suds, as manure, 56
 Soba, 24
 Soda, nitrate of, 53, 54
 Solanum, 74
 — Wendlandii, 93
 Soot, as manure, 56
 Spartium junceum (Spanish broom), 84
 Spiders, destruction of, 60, 62
 Spinach, 175, 176, 177, 179, 182, 184, 185, 186, 187
 Spiræa, 84
 Statice, 74, 164
 Stephanotis, 93
 Sterculia diversifolia, 88
 Stock, 67, 164, 172
 Strawberry, 179, 182, 184, 186
 Sweet herbs, 176, 177
 Sweet pea, 70, 169, 172, 173
 Sweet potato, 177, 179
 Tecoma Brycei, 93
 — capensis, 84, 93
 — radicans, 93
 — stans, 86
 Terminalis arjuna, 88
 Thevetia neriifolia, 84
 Thunbergia, 93, 94, 161
 Tilling, 50
 Time-table, gardener's daily, 32, 33
 Tithonia diversifolia, 85
 Tomato, 180, 181, 183, 184, 185, 186, 187
 Tradescantia alba major, 94
 — violacea, 94
 Transplanting, 46, 47, 48
 Trees, list of, suitable for lawn and specimens, 87
 —, list of large, suitable for extensive grounds, 87, 88
 —, list of medium sized, 85, 86
 Tulip, 77
 Turnip, 175, 183, 184, 185, 186, 187
 Vegetable marrow, 180, 181, 182, 183, 184
 Verbena, 67
 — venosa, 74
 Vinca (periwinkle), 85, 94
 Violet, 74, 161, 166, 167, 169, 170
 Violet perfume, how to make, 155, 156
 Water gardens, 30, 31, 32
 Watsonia alba, 78
 Wigandia urens, 85
 White spot (violets), treatment of, 63
 Window-boxes, 135, 136
 Window-screens, 24
 Wistaria chinensis, 94
 Yucca, 85
 Zinnia, 71

.